





THE AEROPLANE

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WEDNESDAY, JULY 7, 1915

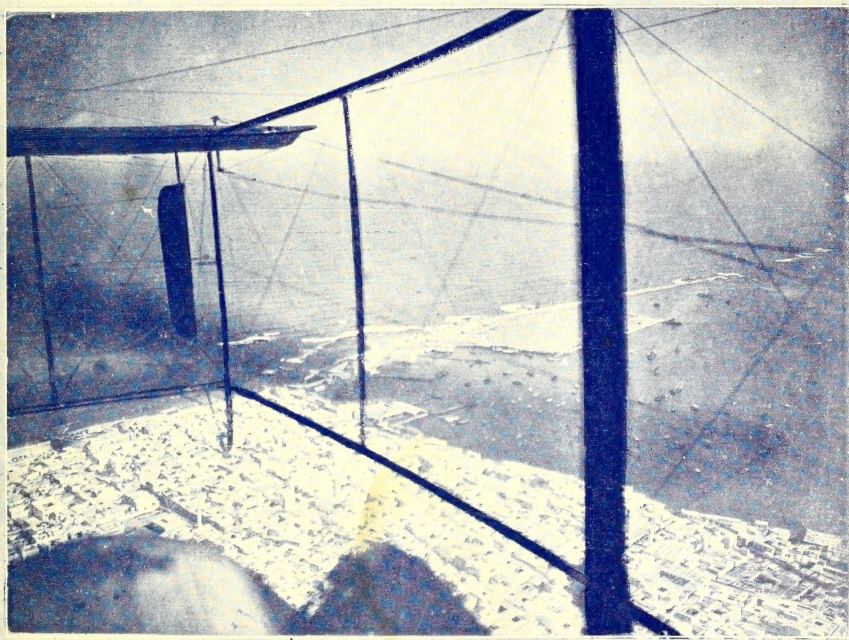
Edited by
C. Grey

Vol. IX. No. 1

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ONE PENNY WEEKLY

THE AIR SCOUT'S VIEW



A photograph of the Town and Bay of Tripoli taken by an Italian officer, now flying for our new Allies, from a Maurice Farman biplane. The typical Maurice Farman tail-booms and skid may be noted.

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THE AEROPLANE

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On the Employment of Massed Aeroplanes.

It may be assumed that no one possessing any common sense believes that if we had 10,000 or 20,000 aeroplanes, with pilots to match, in our possession at the moment we could stop the war in a week, or a month, or in six months for that matter. Even Mr. H. G. Wells himself, who is the arch-prophet of certain recent agitation for a rapid increase in the size of our air fleets, can scarcely believe as much. Nevertheless it is a fact that if we possessed 10,000 aeroplanes with the necessary accessories in the way of transport, and the necessary personnel to use them to the best advantage and to maintain them in proper flying order, they would aid very materially in shortening the war, for several reasons. For one thing such a force could be divided definitely into sections, each devoted to separate purposes, that is to say a certain number would be used as scouts and nothing else, a certain number would be used for repelling enemy scouts, others would be used for artillery spotting, and another section—which would in practice turn out to be the largest of all—would be used simply as an actively offensive force.

The use of aeroplanes in active offensive was regarded, even by sound military critics with a knowledge of aviation, as the mere dream of sensational journalists or of a few wrong-headed Service aviators until actual experience in war showed that bomb-dropping could be of definite military value. Now their usefulness in this direction is fully established, though under existing conditions one aviator may be called upon to fill any one of these four functions in turn.

Assuming the truth of this statement one may regard offensive aeroplanes in two ways, either as guns possessing moderate accuracy and abnormal range, or as cavalry operating in a third dimension. In the former guise they are already used regularly by the Army, individual aeroplanes being sent out to bomb individual points. The second method of use is yet to come, and it can only come when aeroplanes are available in vast quantities. So far as I know their use in this way has been very little discussed outside this paper as a serious proposition, though it was one of the pet ideas of the late Stanley Franklin Cody.

THIRD DIMENSION CAVALRY.

Those who take any interest in military history must have been fascinated by the raids of General Stewart's Confederate Cavalry behind the Federal Lines in the American Civil War, and almost equally so by the operations of his great rival Phil Sheridan. These flying columns, consisting of some thousands of horsemen, accompanied by light transport carts and pack animals, and a small force of galloping guns were able to cut lines of communications, burn stores depôts, capture and destroy hostile towns, and even to capture general officers of some importance. They lost men and horses, but they did useful work.

There seems no reason why, given enough aeroplanes

and pilots, raiding parties of aviators should not act in a similar manner. Ordinary bomb-dropping raids in force will naturally come first, and may do much real damage, but the sooner we get away from the idea that the aeroplane is something apart from the rest of the world and realise that it is only a vehicle for the transport of troops or munitions, or a mount for an individual scout or artillery-spotter, the sooner we shall be able to estimate its true place in military plans.

And, please note, when we have awakened to this fact we shall be clear once for all of that idiotic idea of an "Air Ministry," for if our air raiders are to be of any use they must be firstly, lastly and altogether soldiers, otherwise their operations cannot be carried out with proper effect. Incidentally, the average cavalryman who is anything like a decent horseman would learn to fly in very quick time. So here may be found an opening for the cavalry which is generally held to have lost its vocation in modern war. The idea that N.C.O.s, and men do not make pilots is undoubtedly due to the wrong men being chosen for the experiment in most cases.

THE GERMAN GAME.

Just at this point I would ask my military readers to pause and think whether the comparative absence from our lines for some months past of German aeroplanes in any considerable force does not betoken that the German Staff is "saving up" its aeroplanes and pilots for an enormous onslaught on the R.F.C. when the big thrust is made by troops brought back from the East Front. Situated as the Germans are in field positions of defence, very little air scouting is sufficient to tell them whether and where we have any big move on. Therefore their best game is obviously to pile up reserves of pilots and machines till they are needed for an attack in force. And remember the German output of machines and engines must be many times as great as our own owing to their early start.

The Germans taught us the use of massed machine-guns when we regarded them merely as minor adjuncts to infantry battalions. Must we wait for the Germans to teach us the use of massed aeroplanes as vehicles for an attacking force while we persist in regarding them as mere scouts or as mounts for individuals making sporadic raids which may or may not have a part in the particular scheme of military operations?

POSSIBLE NEW USES.

It is quite easy to see the possibility of landing a raiding force of a couple of thousand men in enemy territory to destroy factories or stores guarded only by partly trained men. It would be possible to land even a bigger force behind an enemy's lines, which under present conditions have to be attacked from the front, and for that force to dig itself in and hold its position with machine-guns while a portion of it attacked the rear of the enemy lines.

Recollect that a flight to such a position would be of short duration and that a machine of moderate size capable of lifting two men and fuel for five or six hours, as the German machines can, could probably lift an extra man or two and a machine-gun if only required to carry fuel for an hour. Also recollect that such a force could be supplied with ammunition and food by other aeroplanes, so long as it was able to hold its position.

The use of aeroplanes in this way may be likened to the action of the metal worker who when he wants to remove a large chunk of steel from a thick sheet and finds a frontal attack with a hack-saw or file too slow or too expensive, proceeds to operate in the third dimension from above by drilling a series of holes at a suitable distance apart along the line which he wishes to occupy, and then connects up the holes with saw or file, so that the desired chunk of metal falls out when the last holes are connected up.

Imagine the holes to be small positions behind the enemy's line seized by troops conveyed on aeroplanes, and connected up by operations on the ground, and you may see the idea. You may say that the original edge of the steel sheet cannot hit back and destroy the holes. No! But have you ever seen a drill break owing to a sheet sagging through its not being properly supported at the edge? Similarly the enemy's original line must be kept at full tension by a frontal attack while the drills, or aeroplane forces, are making the holes behind it. And that frontal attack would be made with mechanically propelled vehicles, not by infantry.

So far the general scheme is perfectly simple and is not likely to be of any particular use to any alien enemy who comes across a copy of this paper, for German thoroughness must have thought it out already, and is probably preparing just such an attack for our men.

Naturally I do not care to go into details in print, but if any responsible military person cares to discuss the question I am prepared to describe such a system of

operations, from the design of the required land vehicles to the speeding up of aircraft production and school work so as to procure the necessary number of machines and pilots.

This is a simple engineer's proposition; it is not that of any kind of visionary or prophet. I merely ask my soldier readers to think it over. It is no use objecting that the chief trouble is finding starting and landing grounds for a thousand or two aeroplanes at a time. That is also quite a simple matter when one takes the question seriously.

THE IMMEDIATE NEED.

Primarily, however, whether for such a "drilling" operation as I have suggested, or for actual "cavalry" raids behind the enemy's lines or for mere every-day bomb-dropping raids in force, which are already recognised as desirable and possible even by those who have never stopped to consider aeroplanes as vehicles for fighting troops and guns, a great quantity of aeroplanes is immediately necessary, and it is just that great quantity which we have not got and are not likely to get until the whole production of aeroplanes is organised, speeded up, and properly "slave-driven" by a strong man with a free and heavy hand, who has complete confidence in the need for the work he is doing and who is regarded with complete confidence by those who have set him to do that work.

I know personally one or two men capable of taking on such a job—incidentally I have no ambition to take part in the work myself, for I know my limitations—and I know half a dozen men at least who would make able lieutenants to him. Probably, however, they will all be dead before the next war, which is the one in which the system will be properly developed, but meantime we want thousands of aeroplanes even for the present elementary and frequently futile ways of using them.

On the Production of Aeroplanes in Quantities.

Curiously enough, two recent articles in very important papers decry the "more aeroplanes" agitation, which somehow gives the impression that a hint has been given to someone that such agitation is unwelcome. Why it should be less welcome than agitation for ammunition is hard to understand. Possibly I am wrong, but I have been told that a retired officer of high rank who has had some slight connection with aviation has been asked by another officer on the active list to use his influence to stop the agitation, and this information may have caused me to misinterpret the writers of the articles mentioned. In which case I apologise to them in advance.

Mr. Massac Buist, of the "Morning Post," who at one time was quite closely in touch with aeronautical matters, writes:—

"Apparently specialists on aviation who have agitated on these terms have no first-hand acquaintance with what is being done in this country."

As one of the "specialists" in question, perhaps I may plead that I have a fairly first-hand acquaintance with what is *not* being done, as well as with what is being done. Hence my part in the agitation.

A curious phrase of Mr. Buist's also suggests semi-official inspiration, for he says:—

"Casual conversations with junior members of these individual services who may have any passing cause for discontent with this, that, or any other detail may be a pleasant enough occupation in the way of gossiping, but is not to be recommended as the means of gaining any real grasp of the subject."

Without for a moment admitting that any part of my views are influenced by "junior members" of the Services I would remind Mr. Buist that in the words of Mr. Kipling:—

"The toad beneath the harrow knows
Exactly where each tooth-point goes.
The butterfly upon the road
Preaches contentment to that toad."

In other words, the man in the unrelieved or badly supported trench, or the man in the unseaworthy ship, or the man on the slow-climbing or badly-built aeroplane, knows exactly where the trouble lies, while the gilded and red-tabbed Staff, more beautiful than any butterfly, preaches contentment to him from cosy billets well out of shell range, or comfortably ashore, and "downs" him if he dares to express his opinions. Happily, the staffs of the flying services include many highly efficient individuals, so the actual harm done in this way is much less than one might expect, and probably the British Services are better off all round in this respect than those of any other country.

Judging from pre-war performances Germany's high state of efficiency and preparedness is due rather to the high authorities taking the advice of practical scientists, of working not merely consulting engineers, and of men of knowledge generally, than to heeding "grousing" in the lower ranks, or to listening to the babblings of pure theorists. The possibility that some of the mere practical men may have formed their opinions by "gossiping" with mere flying officers and civilian aviators, and collating, classifying, sifting out, and editing their

theories and experiences, seems to me rather in favour of such a method of arriving at the true estimate of various machines.

Among my personal friends in both Services I will guarantee to find some experienced flier or other who will damn heartily any one machine used in that Service, and I will find another to praise the same machine as the best he has ever flown. It is only by judging the men as well as their opinions that one can arrive at the just value of the machines.

THE FINANCIAL QUESTION.

In the "Observer," the mysterious "C. W." becomes more definite in his views, for he says :—

"The aeroplane is booming and the voice of the unpractical enthusiast is heard in the land. Of projects for ending the war quickly those aeronautical are usually either for a fleet of 10,000 machines, which, it is assumed, can be made and manned in a few months, or for the building of super-aeroplanes or super-airships.

"As to the former, it would suit the book of certain makers of old types of aeroplanes who would like to 'make hay while the sun shines,' this plan diverting attention from newer types that have won more favour in the field and were not struck off the list at the outbreak of war."

The latter paragraph should be read in conjunction with two paragraphs of Mr. Buist's, in one of which he says :—

"Before attaching any importance to these miscellaneous and constantly recurring agitations, most of the work in connection with which is being done by those having disinterested motives, and, in any case, little enough knowledge of what is going on behind the scenes, one would put in a plea that these knights of the pen and the platform should desist until such time as they can acquire an accurate understanding of the technique and scope of the proposition of a national air service, and of what part manufacturing must play as but one item of many in such a scheme."

Which seems to imply that some of those concerned are working from interested motives. Personally, I must confess that I am deeply interested, though hardly in the manner he seems to suggest.

In the other he says :—

"It is therefore sincerely to be hoped that the Treasury will also display a better understanding of the situation when it is required to give or to withhold sanction for applications for the public to subscribe to new propositions for the manufacture of aircraft at this juncture."

The passages may possibly be intended to be read in conjunction with a recent company prospectus, which, be it noted, did not appear in these pages.

As a matter of fact, there seems little enough reason for company flotation at a period when Government departments are prepared to finance by payment in advance firms who find their capital insufficient to meet the call of wages, and when big engineering firms are quite ready to support people with experience, but insufficient capital.

The inference which one draws as an open-minded reader of the two articles quoted is that company promoters are thought to be behind the agitation for more aeroplanes, whereas as an unprejudiced observer of events it seems more likely that company promoters are merely trying to jump in on an unexploited boom. "So that's that"—as one of our greatest philosophers has said.

A CERTAIN LIVELINESS.

On the more practical side of the question, "C. W." writes :—

"Does it not occur to those who advocate a fleet of 10,000 aeroplanes that the naval and military authorities of France and England are fully alive to the value of aerial raids, and do they imagine that aerial preparations have ceased or are languishing? Secrecy must be preserved as to these matters; to reply to the criticism would involve revealing plans and preparations, and it must, therefore, be permitted to continue to impress the less thoughtful sections of the public."

Now that is just precisely what does not occur to this present advocate of more aeroplanes—the figure 10,000 is neither here nor there, it is no more definite than the Navy League's ancient demand for "£1,000,000 for Aeronautics," which seemed equally preposterous at the time.

The Naval and Military Authorities were not fully alive to the fact that we should need an unlimited supply of big guns and high explosive ammunition, or an enlisted army of munition workers, or a lot of other things which were being made in small quantities while we needed them in enormous numbers. The high authorities being used to guns and sundry other things in their youth, before increasing years dimmed their perception and stereotyped their ideas, are still able to envisage artillery on a vast scale, but aircraft are a new thing and the use of aeroplanes as simple transport vehicles for a striking force may well be as much outside their mental scope to-day, as the serious use of air scouts was beyond them three years ago.

HEADQUARTER EFFICIENCY.

As far as the Air Department and the Department of Military Aeronautics are concerned, no one need have any doubts, for those in control are very fully alive to what is needed. Anyone who knows of the magnificent work which has been done by the Deputy Director of Military Aeronautics and the able staff which he has gathered round him at the War Office realises that, considering all the difficulties which existed at the beginning of the war, the increase of output which that department has produced by a skilful combination of leading, driving, moral suasion, hard words, fatherly advice, oil, vinegar, and strong acid, according to the needs of each individual case, is simply astounding.

Some day perhaps due recognition will be given to the very important if unadvertised part these officers and the staff of the Aeronautical Inspection Department have played in saving the British Army from staggering losses, if not from annihilation, ever since the original stock of aeroplanes which crossed the Channel with the Expeditionary Force was smashed up or worn out.

Naturally, mistakes here and there could be pointed out by the hypercritical, but perfection has never yet been achieved in anything in this world, and where any individual has had a real or imagined grievance his complaint has always been met in a most reasonable spirit.

When the time comes to build up a Flying Corps of a size equal to or even greater than that of the Royal Regiment of Artillery one hopes that the officers who have done so much for it in its early days will meet with their just reward.

HOW TO GET AEROPLANES MADE.

To return to "C. W.,"—one may agree with the first phrase of the following paragraph while disagreeing with the rest :—

"The increase in the number of machines turned out

has exceeded all expectations; but with every ounce of material and every available skilled worker in use, the making of 10,000 machines, over and above those required for reconnaissance and other duties, would take years. To mention one practical difficulty, if the Government gave an order to Messrs. A. to deliver fifty aeroplanes a week, and Messrs. A. had power to acquire (by force if necessary) the required motors, it would simply mean that Messrs. C. and Messrs. D. could not go ahead with the aeroplanes they were building, because the motors they had ordered could not be delivered—that Messrs. A. had collared the lot."

With the assistance of a dozen first-class American factory organisers, preferably, of course, those of British birth, and perhaps a hundred of their picked foremen, it should be easy to raise the output of aeroplanes in this country to a thousand a week, and the engines to match could be produced equally easily. If one strong man were given a perfectly free hand to-day he could reach that output in six months from now and deliver 1,000 machines in the first week in 1916. Before "C. W." starts writing about factory output he should learn something about factory organisation, a subject concerning which very little indeed is known in this country.

If we cannot get the material in this country we can get it in America. If our workmen will not work on the American system or at American speed we can get men in America too, for there are some millions of British workmen there who have learnt American methods and who would be pleased to come over and use them for the defence of their motherland. Also, remember that actually there is not much more work in an aeroplane than there is in a Ford car, if only someone will take the trouble to work out a few simple standardised designs on a "minimum of operations" basis.

THE TRAINING OF PILOTS.

As to the supply of pilots, "C. W." says:—

"Pilots are being trained at as great a rate as possible with existing facilities. Early in the war the Government took measures to increase the facilities for training flyers. If the truth could be given it would have to be admitted that the increase could not have been appreciably greater than it has been. The weather factor counts, and a steady proportion of pupils are not complete successes."

The list of aviators' certificates, still officially published for the benefit of the world at large, shows how slow the increase is compared with what it might be. The rate of increase is not helped by the class of youth now mostly available for training as an officer-aviator, or by the fact that little is done to train N.C.O.s and men.

As I pointed out long before the war, the mistake was made early in the life of the R.F.C. of selecting the "good boys" from among the N.C.O.s of the Corps for training as pilots, instead of going through the defaulters' sheets, picking out the real "bad hats," and putting them up on aeroplanes to fly or break their necks as they chose.

There is sound philosophy in "Punch's" famous picture of the ship's "jaunty" who, reporting the crimes of a prisoner, says to the Commander: "'E goes ashore when 'e likes, 'e overstays 'is leaf, 'e comes aboard intoxicated, 'e uses 'orrible langwidge. In fact, sir, 'e carries on just like a bloomin' officer!"—or words to that effect.

Allowing that these "carryings on" in peace time are the result of sheer high spirits and not of inherent vice, one sees why the type of man who resembles a certain cheerfully reckless type of officer may make a very useful flier.

The good boys of all ranks are afraid of smashing machines and afraid of incurring official displeasure, even if they are not afraid of breaking their necks. Moreover, some of the best instructors are being wasted on other work, and much might be done to improve the machines used for instruction at many Service schools, and by using different types.

THE BIG AEROPLANE AGAIN.

Referring to the multiple-engine aeroplane, about which the Press has been making such a fuss lately, "C. W." says:—

"A big multiple-engine is in process of development for Great Britain, and it has been on the way for some months. It will be a few months more before, even with the best of progress, it can take the sky by squadrons."

One does not know to which particular machine he may be referring, but some of which I wot are never likely to "take the sky" (priceless phrase that) at all. On the other hand, there are possible types which could, with proper organisation, be turned out like sausages.

On the same subject he says:—

"It would be well if those who encourage the ideas referred to would reflect for a moment on the months of vicissitudes through which the Curtiss trans-Atlantic seaplane and the Sikorsky biplane have been, the former without any real success."

As to that, it entirely depends what he understands by success. It is true that the "America" never flew the Atlantic, but, knowing a good deal of the work she has done, I should reckon her as being very far from a failure even with her small engines, and with bigger engines I fancy her progeny will surprise some people.

The Sikorsky was, of course, very much an experiment herself, and her designer used her for all sorts of experimental purposes, progressing slowly, step by step. The biggest Sikorsky is still an experiment, but the smaller ones, which owe little to the "Ilia Moura-metz," have, one hears, done quite good work.

THE REAL KEY TO THE POSITION.

To sum up, the provision and successful operation of a really big force of aeroplanes is purely a matter of organisation, and organisation depends on having the right men in the right place.

So far as certain departments are concerned, we are happy in having the right men there, as I have already said; but there may be difficulty in finding more of a similar kind for responsible positions in a bigger organisation. The men exist, but they will take some finding.

One of the most evil and harm-producing doctrines in the world is that expressed in a saying attributed to Field-Marshal Sir Evelyn Wood—namely: "Does my country require me to sweep a crossing? Give me the broom!" It is the same as that villainous phrase of a naval friend of mine, to the effect that "In war time many a sahib has to do sweeper's work." It is evil, villainous, and productive of harm, because there are not enough sahibs to go round as it is, and the result is that the sweeper is perforce put on to do the sahib's job, which means disaster and damnation.

The whole secret of organisation is to find the sahibs and to kick out the sweepers. The sahib's duty to his country is to refuse to be a sweeper if he has any special knowledge which is useful in other departments. And the duty of the big man at the top is to see that the mediocrities—the white babus—in those departments are not allowed to hamper the sahib's work by jealousy of him and by petty dissensions among themselves—which saying may perhaps be understood of certain people in several departments.—C. G. G.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," June 29th, 1915.

ADMIRALTY, JUNE 26TH.

ROYAL NAVAL AIR SERVICE.—Prob. flight sub-lieuts. confirmed in rank of flight sub-lieut. : R. B. Pullin. Nov. 12th. G. H. Reid. Nov. 19th. G. W. Hilliard. Jan. 4th. H. R. Hopperton. D. W. A. Barton. Jan. 13th. L. H. Hardstaff. March 2nd.

Prob. flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service : W. H. Greer. Feb. 21st. H. S. Kerby. March 21st.

* * *

WAR OFFICE, JUNE 29TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Adjt.—Bl. Maj. E. B. Gordon, Northd. F., vice Capt. A. B. Burdett, York and Lanc., who resumes appt. as flight com. April 28th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (temp. capt.) to be lieuts., and retain temp. rank—April 24th : F. C. Jenkins, P. R. Grace, A. Huggins, R. H. Collier.

Sec. lieuts. to be lieuts.—April 24th : A. Payze, J. C. Joubert de la Ferté, E. Keith Davies, G. H. Eastwood, J. J. Hammond, O. Mansell-Moullin. June 30th : G. C. R. Mumby, T. V. Smith, R. B. Bourdillon, R. Orme, F. Jolly, J. E. Storey, H. T. Musker, L. F. R. Fell, G. C. Gold, F. L. Scholte, A. E. Snape, H. Burchall, T. E. Robertson, C. P. Ogden, J. W. Griffith, A. M. Cott, S. H. B. Harris, A. G. Clark, L. M. Bennett.

G. G. Hubbard to be sec. lieut. (on prob.). June 11th.

* * *

From the "London Gazette," July 1st, 1915.

WAR OFFICE, JULY 1ST.

ROYAL FLYING CORPS.—MILITARY WING.—Flight Com.—Lieut. C. H. Marks, R. of O., from flying officer, and to be temp. capt. whilst so employed. June 19th.

Asst. Eqpmnt. Officer—Sec. Lieut. A. M. Low, S.R. June 18th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieut. (on prob.) confirmed in rank : A. M. Low, C. J. Chabot, J. Gay.

* * *

On July 1st, a Special Supplement of the "London Gazette" was issued, containing the list of warrant officers, non-commissioned officers, and men to whom the King has been graciously pleased to award the Distinguished Conduct Medal, for acts of gallantry and de-

votion to duty while serving with the Expeditionary Force.

The names appeared in the "Gazette" of June 23rd, but the deeds of gallantry for which the awards are made are now published for the first time. The following N.C.O.'s and men in the Royal Flying Corps are included among the number :—

1370 SERGT. R. H. CARR, Royal Flying Corps (now Second Lieut., Special Reserve). For the conspicuous gallantry and ability with which he has carried out the duties of a pilot.

672 CPL. W. DOBBIE, Royal Flying Corps. For gallant conduct and coolness when carrying out his duties under fire ; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

671 FIRST-CLASS AIR MECHANIC W. HARPER, Royal Flying Corps. For gallant conduct and coolness when carrying out his duties under fire ; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

255 FLIGHT-SERGT. W. C. HAYWARD, Royal Flying Corps, For conspicuous zeal, devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

15 FLIGHT-SERGT. T. HUGHES, Royal Flying Corps. For conspicuous zeal and devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

1082 CPL. H. JAMESON, Royal Flying Corps. For conspicuous coolness and gallantry on several occasions in connection with wireless work under fire.

1836 FIRST-CLASS AIR MECHANIC L. S. NEWNS, Royal Flying Corps. For gallant conduct and coolness when carrying out his duties under fire ; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

836 CPL. R. E. P. PAYNTER, Royal Flying Corps. For gallant conduct and coolness when carrying out his duties under fire ; also for the conspicuous thoroughness and efficiency for which his work has been noticeable.

1376 SERGT. E. R. C. SCHOLEFIELD (now Second Lieut. in Special Reserve of Officers), Royal Flying Corps. For the conspicuous gallantry and ability with which he has carried out the duties of a pilot.

306 FLIGHT-SERGT. T. G. G. TINDALE, Royal Flying Corps. For conspicuous zeal and devotion to duty, and the noticeably efficient manner in which he has carried out his responsible duties.

* * *

From the "London Gazette," July 2nd, 1915.

ADMIRALTY, JUNE 28TH.

ROYAL NAVAL AIR SERVICE.—Promotions made :



The barracks on the Island of Urk, in the Zuyder Zee, where sundry British officers, including aviators, are now interned.

Flight lieuts. to be flight coms.: T. A. Rainey, C. Draper, H. A. Busk, E. T. Newton-Clare, A. Corbett-Wilson, H. R. Busted, H. C. Fuller, A. Nickerson, W. H. Wilson, H. E. M. Watkins, F. K. Haskins.

Flight lieuts. for temp. service to be flight coms. for temp. service: S. V. Sippe, D.S.O., J. W. K. Allsop, T. D. Mackie, C. H. Butler, C. Hornby.

Flight sub-lieuts. to be flight lieuts.: G. W. Price, T. K. Young, E. F. Bray, E. J. Hodson, A. S. Maskell, K. F. Watson, B. S. Benning, E. J. Cooper, W. K. F. G. Warneford, S. E. Ritchie, P. E. H. Wakeley, G. E. Livock, C. W. Dickinson, C. H. C. Smith, R. M. Field, W. S. Newton-Clare, G. F. Breese, F. G. Andrae, J. C. Brooke, C. L. Startup, C. B. Dalison, W. L. Welsh, P. N. Barnes, J. S. Mills, D.S.O., P. Legh.

Flight sub-lieut. for temp. service to be flight lieut. for temp. service: W. H. Elliott, June 25th.

* * *

WAR OFFICE, JULY 2ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Lieut. D. L. Allen, R. Irish F., from asst. eqpm't officer. June 1st, but with precedence from January 15th, 1913.

* * *

From the "London Gazette," July 3rd, 1915.

WAR OFFICE, JULY 3RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—June 18th: Sec. Lieut. N. J. Bengough, Fife and Forfar Yeo., T.F.; Sec. Lieut. J. Gay, S.R.; Sec. Lieut. C. J. Chabot, S.R.

* * *

From the "London Gazette," July 3rd, 1915.

WAR OFFICE, JULY 5TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of Sec. Lieut. (on prob.) J. D. Dinneen, cancelled. June 19th.

NAVAL.

The following appointments were notified at the Admiralty on June 29th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned flight lieuts. have been promoted to the rank of flight coms., all to date June 25th:—H. A. Busk, T. A. Rainey, E. T. Newton-Clare, C. Draper, A. Corbett-Wilson, H. R. Busted, H. C. Fuller, A. Nickerson, W. H. Wilson, H. E. M. Watkins, and F. K. Haskins.

Acting Flight Coms. T. D. Mackie, C. Hornby, Temp. Flight Lieuts. S. V. Sippe, D.S.O., J. W. K. Allsop, and C. H. Butler promoted to be temp. flight coms., to date June 25th:—

The following flight sub-lieuts. promoted to be flight lieuts., all to date June 25th:—P. Legh, J. S. Mills, D.S.C., P. N. Barnes, C. B. Dalison, C. L. Startup, J. C. Brooke, F. G. Andrae, G. F. Breese, W. S. Newton-Clare, R. M. Field, C. H. C. Smith, C. W. Dickinson, G. E. Livock, P. E. H. Wakeley, S. E. Ritchie, W. K. F. G. Warneford, E. J. Cooper, W. H. Elliott, W. L. Welsh, G. W. Price, T. K. Young, E. F. Bray, E. J. Hodson, A. S. Maskell, K. F. Watson, and B. S. Benning.

Flight Lieuts. D. C. S. Evill and J. P. Wilson, D.S.C., and temp. flight lieuts. G. M. Dyott and F. Thurston granted the acting rank of flight coms., to date June 25th.

* * *

The following appointments were notified at the Admiralty on June 30th:—

ROYAL NAVAL AIR SERVICE.—Mr. F. R. F. Sworder granted a temp. commission as lieut.-com. R.N.V.R., with seniority June 19th.

The following have been entered as temp. lieuts., R.N.V.R., with seniority June 25th:—T. M. Barlow, J. S. Buchanan, and F. E. Pollard.

The undermentioned have been entered as temp. sub-lieuts., R.N.V.R., with seniority June 29th:—C. G. L. Cater, D. W. Pinckney, E. S. Snell, J. D. Coleridge, D. A. Elliott, V. J. Harraway, J. St. V. Crowder, E. J. Finnimore, and D. S. Vernon.

Temp. Lieut. R.N.V.R., A. Keiller entered as acting flight lieut. for temp. service, to date June 27th.

Temp. sub-lieuts. R.N.V.R., C. C. Turner and H. C. Morris promoted to temp. lieuts. R.N.V.R., with seniority May 8th and 15th respectively.

The following have been entered as proby. flight sub-lieuts. for tempy. service, to date as stated:—L. Radmore, G. E. Williamson, and L. C. Shoppee, June 25th; F. S. W. Savill-Onley, June 29th; R. E. Bush, July 17th.

Chief petty officers, R.N.V.R., E. D. Galloway and G. Wilde, granted temp. commissions as sub-lieuts., R.N.V.R., to date June 27th; J. W. Hedge, promoted to temp. sub-lieut., R.N.V.R., with seniority June 27th.

Sec. lieut., R.M., G. Bennison, granted a temp. commission as sub-lieut., R.N.V.R., to date June 28th.

Mr. B. A. Millard entered as proby. flight sub-lieut. for temp. service, to date July 17th.

Chief Petty Officer (Mechanic).—S. C. Tucker (Acting Carpenter, R.N.), promoted to Warrant Officer (2nd grade), with seniority of April 1st.

* * *

The following appointments were notified at the Admiralty on July 2nd, 1915:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut.-Com. O. Locker-Lampson, M.P., granted the rank of temp. actg. com., R.N.R., and re-appointed to the "President," additional, for R.N.A.S., to date July 3rd.

Mr. W. R. Prentice granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date July 1st.

Mr. H. J. Parker granted temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date June 24th.

Messrs. C. H. Brinsmead and A. T. Moore entered as proby. flight sub-lieuts. for temp. service and appointed to the "President," additional, for R.N.A.S., to date July 17th and June 25th respectively.

Actg. Sub-Lieuts., R.N.R.—W. Man transferred to R.N.A.S. as proby. flight sub-lieut. for temp. service and appointed to the "President," additional, for R.N.A.S., to date June 30th.

* * *

The following appointments were notified at the Admiralty on July 3rd, 1915:—

ROYAL NAVAL AIR SERVICE.—Mr. W. M. Lange granted a temp. commission as lieut., R.N.V.R., to date June 28th.

Temp. sub-lieut., R.N.V.R., Viscount Tiverton promoted to the rank of temp. lieut., R.N.V.R., to date July 1st.

Mr. C. Lightfoot granted a temp. commission as sub-lieut., R.N.V.R., with seniority July 2.

* * *

The following appointments were notified at the Admiralty on July 5th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut., R.N.V.R., E. Willis, to the "President," additional, for R.N.A.S., to date July 3rd.

The undermentioned granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: W. L. Adams, A. R. Fenn, T. G. Hull, July 3rd; B. E. J. Petre, June 28th; and M. J. Astle, June 30th.

The following granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: N. W. Bancroft (armoured cars), July 3rd; J. P. Bourke, July 4th.

The undermentioned entered as proby. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S.; J. A. G. Swaine, July 3rd; H. R. C.

Dewes, June 29th; R. S. W. Dickinson, July 12th; A. D. W. Allen, W. T. S. Williams, C. W. Elliott, J. A. Sadler, and H. L. E. Tyndale-Biscoe, July 11th.

* * *

The Secretary of the Admiralty announced on July 1st the following casualty under date June 30th:—

KILLED.

Flight Sub-Lieut. Preston A. Watson, Royal Naval Air Service.

* * *

Preston Albert Watson was born on May 17th, 1880, at Dundee, and was educated as an engineer. For several years past he devoted his time and his considerable means to aeronautical experiment, and about 1913 he produced a curious type of tractor biplane, in which the lower plane and tail were fixtures and all the controlling was done by rocking the upper plane on a universal joint. In this machine the pilot sat in a basket arrangement with his legs projecting through the lower plane. From the universal joint of the upper plane a lever descended to a position in front of the pilot, who rocked the whole plane with it.

Last year Mr. Watson took the machine to France and entered it for the "Concours de Sécurité," or Security Competition. The machine was not a success, partly, no doubt, as Mr. Watson claimed, because of its being underpowered. Nevertheless, it did at times get off the ground for short distances, and Mr. Watson decided to continue his experiments.

Then war broke out and Mr. Watson offered his service to the country. To increase his usefulness he decided to learn to fly at his own expense, and joined the London and Provincial School at Hendon, where he took his certificate, No. 1,117, on March 16 of this year.

He was appointed to the R.N.A.S. about three months ago.

According to the evidence of eyewitnesses, he was flying a biplane of unnamed make near Cross-in-Hand, Sussex, when he descended suddenly and was killed. None of the witnesses apparently had knowledge of aircraft, so there may be doubts as to whether a wing broke, as they state, though the fact that parts were found in an adjoining field seems to point to such an assumption. Possibly a fast landing and a crash through a hedge might have such an effect, or an explosion of the engine might cause a breakage in the wing.

It is the irony of fate that one who has given the best years of his life to securing safety in aeroplanes should thus lose his life in an accident. Mr. Watson was an

earnest worker for aviation, and his fate is greatly to be deplored.

* * *

The following appeared in the casualty list issued on July 1st:—

MEDITERRANEAN EXPEDITION.

ARMoured CAR SQUADRON, ATTACHED TO R.N. DIVISION.

Under date June 28th:—

SLIGHTLY WOUNDED.

Acting Lieut.-Com. Reginald B. B. Colmore, R.N.

Lieut. Frank H. M. Savile, R.N.V.R.

Lieut. Percy M. Woodland, R.N.V.R.

Sub-Lieut. René J. M. de St. Ledger, R.N.V.R.

Reported under date June 28th:—

Killed.—Thomas, Richard Roy, P.O. Mech.

Wounded (all P.O. Mechanics).—Barker, Herman Edgar; Clegg, William Basil; Dillon, William John; Trussell, Arthur George; Westmuckett, George Stanley; Whitten, Henry.

* * *

The following appeared in the casualty list from the Dardanelles, published on July 5th:—

ARMoured CAR SQUADRON ATTACHED TO R.N. DIVISION.

Previously Reported Wounded and Missing, now Reported Severely Wounded and not Missing—Sunderland, James Thomson, P.O. Mechanic.

* * *

The following appeared in the casualty list from the Dardanelles, published on July 6th:—

ARMoured CAR SQUADRON ATTACHED TO R.N. DIVISION.

KILLED.—Wilsdon, William Henry, P.O. Mechanic.

* * *

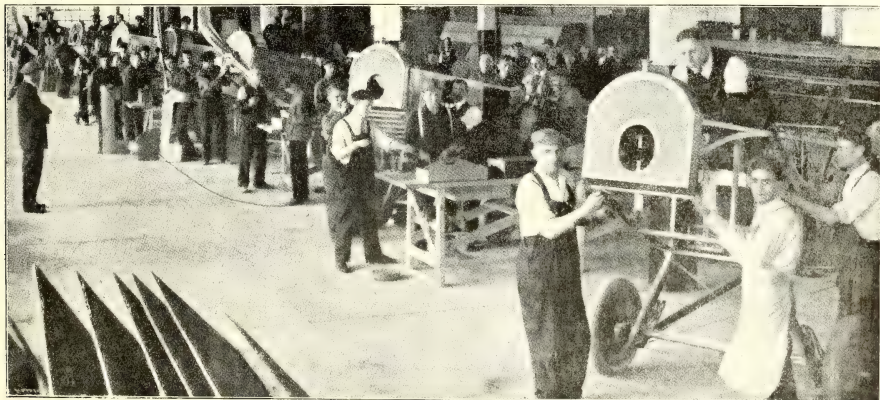
The "Court Circular" of July 1st states that the King on that day decorated the following with the Distinguished Service Cross: Flight Commander J. P. Wilson, R.N., and Flight Lieutenant J. S. Mills, R.N.

* * *

A letter on vellum has been awarded to the following officer expressing the approbation of the Lords Commissioners of the Admiralty of his services and conduct on the occasion mentioned:—

Commander HENRY CROSBY HALAHAN, R.N.

For services in mounting naval guns on shore and



A Scene in the Curtiss Shops, which are busy building aeroplanes for the Allies.

operating from advanced positions against German batteries in Belgium, April, 1915.

* * *

The Secretary of the Admiralty made the following announcement on July 5th:—

A German official communiqué issued on July 4th stated that German aircraft had dropped bombs on Landguard Fort at Harwich. The following are the facts concerning this incident, otherwise hardly worth noting. On Saturday forenoon a German seaplane and aeroplane appeared off Harwich, flying very high. Our aircraft immediately started in pursuit and drove them off. The hostile aircraft then dropped their bombs into the sea and made their escape, still flying at a great height.

* * *

The marriage between Lieut. Francis Belt, R.N.V.R., R.N.A.S., of Adelaide, and Violet, second daughter of the late William Lucas-Shadwell, of The Hall, Fairlight, Sussex, took place on July 3rd, at St. George's, Hanover Square. The ceremony was performed by the rector, the Rev. F. Thicknesse. The bride was accompanied by her uncle, Mr. F. Baring Du Pre, and given away by her mother. The best man was Commander O. Locker-Lampson, R.N.V.R., R.N.A.S., M.P. Owing to mourning in the bride's family, only a few friends and near relatives were present.

* * *

An engagement is announced between Flight Sub-Lieut. Eustace de Courcy Hallifax, R.N., fourth son of the late Read-Admiral J. S. Hallifax and of Mrs. Hallifax, Kingsland House, Shawford, and Edith, elder daughter of Lieutenant-Colonel H. H. Southey, late 35th Scinde Horse.

* * *

Experienced fitters and turners are required for the Royal Naval Air Service; pay 4s. a day and all found. Applicants should attend at the R.N.A.S. Recruiting Office, Hendon, in the forenoon, bringing their birth certificates, references, and National Insurance cards. Men engaged in Government work need not apply.

MILITARY.

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on June 28th, refers to aircraft:—

June 28th.

It will have been remarked that almost the only incidents recorded for several days past are such as are connected with mining and aviation. This is due to the fact that in the stage at which the war on land has now arrived there are periods when operations are perforce confined to action below and above the surface of the ground. In this development there is some resemblance to the naval tactics of the moment, which are to a great extent restricted to the employment of dirigibles and aeroplanes above the sea and of submarines and torpedoes below water.

* * *

The Honours List, published on July 4th, contained the following:—

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned Officers to be Companions of the Distinguished Service Order in recognition of their gallantry and devotion to duty whilst serving with the Expeditionary Force:—

Captain AMYAS EDEN BORTON, the Black Watch (Royal Highlanders), attached Royal Flying Corps.

Captain ANTHONY MARSHALL, 28th Light Cavalry, Indian Army, attached Royal Flying Corps.

When on flying reconnaissance over the neighbourhood of Staden on June 7th, 1915, Captain Borton was

wounded in the head and neck by a bullet fired from a hostile aeroplane, and although suffering severely from loss of blood he continued, with the assistance of the observer, Captain Marshall, to bandage his wounds and completed the reconnaissance on the prescribed course. His injuries are such that he is not yet out of danger. Captain Marshall continued his observations after rendering all possible aid to the pilot, who was gradually losing consciousness, notwithstanding that the German aeroplane was persistently attacking. The valuable report supplied by this officer is as detailed and complete for the last as it is for the first part of the reconnaissance.

* * *

The following appeared in the casualty list published on June 30th under date June 23rd:—

WOUNDED.

Stott, Capt. J. N. S., 5th Dragoon Guards, att'd. Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on July 5th from General Headquarters under date June 29th:—

KILLED.

Barfield, Sec. Lieut. J. C. H., Royal Flying Corps.

Second Lieut. J. C. H. Barfield, R.F.C., was gazetted to the Special Reserve of Officers in December, 1914. His probationary commission was made substantive in April this year.

* * *

Lieut. Edward Lister, R.F.C. (unofficially notified as having been killed in a flying test in France), was twenty-one years of age, and was educated at Gloucester and Wycliffe College, Stonehouse. He joined the 5th Battalion Gloucester Regt. on the outbreak of war, and afterwards transferred to the Royal Flying Corps.

* * *

The marriage between Captain E. R. L. Corballis, R.F.C. and Royal Dublin Fusiliers, and Miss Enid Mercer Adam will take place very quietly in Bath on the 15th inst. Owing to mourning and the war no invitations will be issued.

* * *

The marriage arranged between Cyril H. Mocatta, second lieut., Royal Engineers, only son of Mr. and Mrs. Herbert Mocatta, 39, Edwardes Square, Kensington, and Dorothy Allen, only daughter of the late C. F. and Mrs. Degen, of 14, Scarsdale Villas, Kensington, will take place quietly on the 15th inst. No invitations are being issued owing to mourning in the bride's family.

* * *

The American Embassy in Berlin has transmitted to the Foreign Office through the American Ambassador a copy of a report of a visit by Mr. Jackson to the camp for officers, prisoners of war, at Danholm, near Stralsund, and a list of British officers interned there. Mr. Jackson says:—

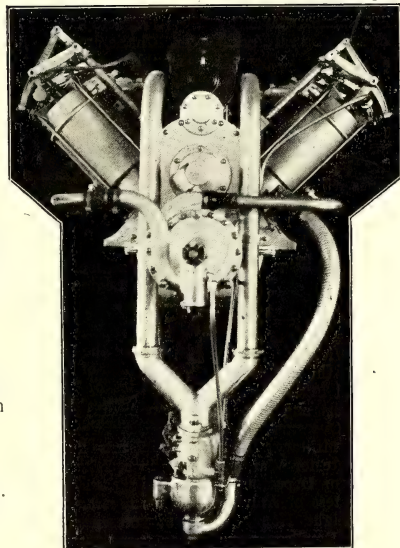
"Danholm consists of two small islands with a connecting bridge, between Stralsund and the Island of Rügen. Until recently the officers from both camps had been permitted to associate with each other, but since some Russian officers made an attempt to escape this privilege has been stopped. On the larger of the two islands there are about 400 officers, among them 27 British. All these officers were transferred from Mainz (Mayence) about six weeks ago, and all find their present more agreeable than their former quarters. I talked freely with all of them, out of hearing of any German. The British officers live by themselves, occupying two good-sized rooms, nine in one and eighteen in the other, there being also one French officer in the larger room, which is partitioned off by wardrobes into three sections. All seemed well and in good spirits, and all were in com-

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munication with their friends at home. All agreed in saying that there was no discrimination against them, and none had any material complaint to make. The commandant promised to consider their wishes in regard to the use of a special field for cricket. Tennis courts are already in use, and there is a large park in which the officers are permitted to walk."

Among the officers mentioned by Mr. Jackson are Capt. D. S. Crosbie, R.F.C., and Lieut. C. Gladstone (attached R.F.C.), and one is glad to hear they are located in what is apparently a fair imitation of Donington Hall.

* * *

Three further aeroplanes have been presented to the Overseas Aircraft Flotilla by residents in the Federated Malay States. On July 2nd Queen Alexandra performed the presentation of several of these aeroplanes, given by residents overseas, at the headquarters of the Royal Flying Corps.

The last three have been paid for by: (1) Mr. Eu Tong Sen, the Chinese mineowner, in the State of Perak, and a member of the Federal Council of the Federated Malay States; (2) by the residents of Kinta, the chief mining district of Perak; and (3) by Mr. Alma Baker, of Kinta.

Sir Ernest Birch, acting for the Federated Malay States, says that several more aeroplanes will probably be forthcoming. The units of the Overseas Flotilla so far are: Hong Kong, 3; Gibraltar, 1; British West Indies, 1; South Africa, 1; Federated Malay States, 3. Full details can be obtained from the Overseas Club, General Buildings, Aldwych, London.

* * *

The following is from the "Court Circular":—

Marlborough House, Saturday.

Queen Alexandra, with the Princess Victoria, visited the Royal Aircraft Factory, Farnborough, this afternoon, and presented five aeroplanes to the Royal Flying Corps, being the gift by the Overseas Dominions and Dependencies, through the medium of the Overseas Club. Colonel Brancker, Deputy Director of Military Aeronautics, representing the Secretary of State for War, received the aeroplanes on behalf of the War Department.

Her Majesty was attended by the Countess of Antrim, the Hon. Violet Vivian, General the Right Hon. Sir Dighton Probyn, Colonel Sir Arthur Davidson, and Colonel Streetfield, Grenadier Guards.

Queen Alexandra was received by a deputation of the members of the Committee of the Overseas Club, including Mr. Bulkeley Evans, barrister-at-law, chairman; Mr. E. R. Peacock, Mr. W. Maxwell Lyte, Mr. Howard d'Egville, and Mr. Evelyn Wrench, hon. secretary; also Mr. Steel-Maitland, M.P., Under-Secretary of State for the Colonies, on behalf of the Secretary of State; Colonel Fulton, chief inspector of the Royal Aircraft Factory; and the agents for the Crown Colonies.

[There seems to be some little inaccuracy about the position of the last officer mentioned, unless, perchance, such an appointment has just been made.]

* * *

The following quotation from the "Morning Post's" account of the same function is also not remarkable for its accuracy:—

"The machines are of the Farnborough type, known as the B.E.2c. The Gnome engines are of 70 horsepower. The detail and construction of the machines need not be referred to, but they represent the latest development, being built on experience gained in the war. The great record made by the B.E. type of machine has hallmark the class, and it is this pattern which the Overseas communities have chosen for all the machines constructed in the workshops of the Royal Aircraft Factory."

[The machines are not fitted with Gnome engines, they do not represent the latest developments, and they were designed long before the war on pure theory which has

resulted in their taking twice as long to build as they need.

Just why the poor innocent subjects of distant Colonies should be induced to subscribe money to be spent in about the most wasteful Government establishment which has ever existed is not explained by the Overseas Committee.—ED.]

FRANCE.

The communiqué of June 29th says:—

In the Argonne there is incessant fighting at Bagatelle, in which air torpedoes and grenades play a prominent part.

* * *

The communiqué of July 3rd says:—

Our aeroplanes successfully bombarded the stations of Challerange (a junction on the Vouziers-St. Ménehould railway, west of the Forest of Argonne), Zarren (on the Dixmude-Thourout railway), and Langemark (north-west of Ypres), as well as the German batteries at Vimy (south-east of Souchez), and Beaurains (south-east of Arras).

* * *

A message from Belfort, published in Paris on June 30, states that the French aviator who raided Friedrichshafen on June 27, and was obliged to land at Rheinfelden, in Switzerland, is Lieut. Gilbert, of the Belfort aviation centre. This deprives the French Army of one of its bravest and most skilful aviators. M. Gilbert had already won the Legion of Honour and special promotion.

* * *

It was reported from Paris on July 1st that M. Hennessy, deputy for the Charente, had submitted before the Army Commission of the Chamber a scheme to create four Under-Secretaries of War to direct the aviation, railways, supplies, and health branches of the Army, respectively.

[The scheme is a good one and corresponds closely to the suggestion made in this paper that Mr. Churchill should be made First Air Lord of the Admiralty.—ED.]

* * *

It is reported that on June 22nd the Belgian Aviator-pilot Toccesen and his passenger, Corporal Kosyns, were flying near Etampes, and were landing when the machine, instead of flattening out, flew into the ground. Toccesen was killed and Kosyns had his arm and thigh broken. Last year the latter had a similar accident at Antwerp.

* * *

Writing in "L'Union Latine," M. le Colonel Lara, in a very able article, points out that there can never be enough aeroplanes as long as the Germans are in France.

He advocates strongly aircraft patrols along the coast on the look-out for submarines, and even suggests that the British should ask their Allies, the Japanese, to send their Naval aircraft to Europe to assist in clearing the North Sea. He advocates more and more air raids into German territory, always with different objectives, and puts a thousand aeroplanes always ready for service as the minimum number which should be detailed for this particular duty.

When one considers that half-a-dozen rounds from a 9-inch gun costs about as much as a new aeroplane, one sees that his proposition, like those of various British papers, are by no means so visionary as some people seem to think.

GERMANY.

The communiqué of June 29th says:—

In the Italian theatre of war . . . yesterday a naval aviator bombarded near Villa Vicentina a hostile captive balloon, and obliged it to descend. The same aviator to-day dropped successfully heavy bombs on the hostile artillery park at San Canciano, and badly damaged a steamer at Sdobba.

POINT BY POINT

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- ¶ **IMPERVIOUSNESS**—Examine a surface doped with Titanine with a powerful magnifying glass, and see how the fabric is filled in. Try this test with another dope. Try also varnishing over three coats of Titanine and three coats of another dope. Varnish will not penetrate Titanine, as can be seen by examining the back of the fabric.
TITANINE SAVES ONE OR MORE COATS.
- ¶ **FLEXIBILITY AND ADHESION**—Dope two pieces of similar fabric with Titanine and another dope, bend the two samples backwards and forwards, expose both to the weather for a few weeks, and repeat the bending tests. The Titanine sample will retain its flexibility and adhesion in a remarkable degree, when other dopes lose the greater part of their flexibility and adhesion.
- ¶ **RESISTANCE TO FLAME**—Place a burning wax vesta on fabric doped with Titanine, and leave the match to burn completely out. Repeat the test with another dope. The result is convincing.
- ¶ **LIGHTNESS**—Three coats of Titanine, forming the impervious surface mentioned above, weigh less than 2 oz. per sq. yard. Four coats can be reduced to 2 oz., either by dilution with spirit, or by careful and rapid application. Tests will show that weight for weight, Titanine gives the most impervious skin.
- ¶ **RESISTANCE TO OIL AND PETROL**—Mr. J. L. HALL, of the Hall Aviation Co., Hendon, writes recently:—The Tractor biplane (coated with Titanine) has now been in constant use for two months, and the canvas is still clean and new looking, in spite of the deteriorating effects of oil, petrol, &c., and the water used in washing down the machine.
- ¶ **DURABILITY**—The manufacturers of Titanine satisfied themselves, before putting it on the market, that it possessed a durability hitherto quite unknown in dopes.
- ¶ **FINISH**—The matt surface of Titanine affords a firm hold for finishing varnish, which does not adhere equally well over a glossy surface. When no finishing varnish is applied, Titanine can be polished quickly, and inexpensively (and at less than one-fourth the cost of a coat of dope) by means of a special polishing fluid supplied by the manufacturers.
- ¶ **PRICE**—Let us quote you !



“TITANINE” CONFORMS TO R.A.F. SPECIFICATION XI.

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London Branch: 57 FENCHURCH STREET, E.C.

Telegrams: “Tetrafree, Fen.” London.

Telephone: Central 2400.

The communiqué of June 30th says:—

A hostile aeroplane has been forced to descend behind our line, and the occupants have been made prisoners.

* * *

The communiqué of July 1st says:—

Hostile aviators bombarded Zeebrugge and Bruges without causing military damage.

* * *

The communiqué of July 4th says:—

Our aviators yesterday were very active. German aircraft dropped bombs on the Langward Fort of Harwich and upon the English flotilla of destroyers. They also attacked the fortified railway works of Nancy and Dombasle and the barrier road of Remiremont. A German battle aeroplane forced a French aviator near Schbuch to land.

The enemy dropped bombs at Bruges without doing military damage.

* * *

Various papers have "spread" themselves on the subject of "aerial torpedoes" mentioned in the French communiqué.

The "Times" commits itself to the statement that "there is the aerial torpedo, properly so called, which is driven through the air in the same way as a marine torpedo through water—that is to say, by a motor, and not by the initial propulsion given by an explosive charge.

"The torpedo used by the German Army is believed to be of a type invented by Colonel Unge, of the Swedish Army. The rights of the Unge torpedo were acquired in 1908 by Krupp's, and its secret has been carefully kept, but it is believed to be driven by compressed air. It was announced in 1909, while experiments were being made, that the Unge torpedoes had an initial speed of 164 ft. per sec. (109 miles per hour), which increased up to 984 ft. per sec. (656 m.p.h.), giving them a range of nearly three miles. [Bunkum, my dear "Times," bunkum! That is projectile speed. No "motor" could touch it.—Ed.]

"The Germans, however, apparently only use them at comparatively short ranges, probably owing to the difficulty of obtaining accurate fire at any distance.

"The explosion of the air torpedo is most destructive and demoralising in its effect. An instance was given by a correspondent of the "Times" who was present at the fighting on the Yser in October, a whole section of a Belgian trench, with its occupants, being blown out of the bank of the Yser Canal into the water by one of these projectiles." [If it is a projectile it is not a torpedo, for a torpedo is merely an automatically controlled submarine. Some papers have weird yarns of airships with wireless controls, like those seen at music halls. None of them explains what use such things would be in the Argonne Forest, where they would just bump into trees and explode.

What are really meant are the big fat bombs thrown by catapults or "minenwerfer."—Ed.]

RUSSIA.

A "Times" correspondent reported on July 5th that Russian aeroplanes are raiding the enemy's lines. It is announced that an aeroplane of the "Ilya Mourometz" type [which it probably was not—Ed.] reconnoitred the San region and dropped three bombs on convoys near Lezajsk. Seven more were thrown on the railway station at Przeworsk. One train in the station was struck by a bomb, caught fire, and clouds of smoke were seen rising. It would appear from German reports that the train carried artillery ammunition, and that, besides the killing of a number of men, 30,000 rounds of artillery ammunition were destroyed. The enemy communications with the rear were also temporarily interrupted. The Russian aviators took photographs of the great fire at Przeworsk.

* * *

Appropos the stories of Russian "aviatrices" flying on

active service, a friend of THE AEROPLANE who knows Russia intimately, writes that it is quite likely that there are women pilots doing auxiliary work with the Russian Army, and names those best known.

Princess Dolguroki (Henry Farman biplane No. 16 type) took pilot's diploma, summer 1913, is considered a very good pilot and is an all-round sportswoman.

Mdlle. Golanchikova (Henri Farman biplanes Nos. 7 and 16 types, Fokker, Nieuport, and Morane-Saunier monoplanes) took pilot's diploma in 1911, may be considered the most experienced woman-pilot in the world. Made world's height record for women, unbeaten as yet, in 1913, on Fokker monoplane at Johannisthal, reaching a height of over 3,500 metres.

Mme. Inatra (D. F. W. biplane) took diploma in 1913.

Princess Schakowsky (German Wright and Henri Farman Nos. 7 and 16 types, biplanes), took pilot's diploma in 1912. Is well-known as having been the pilot of the Wright biplane when it met with the terrible accident at Johannisthal which resulted in the death of Abramovitch, the great Russian Wright pilot, who was at the time her passenger. Is an all-round sportswoman.

Mdlle. Zwereva (Henri Farman biplane, Nos. 7 and 16 types), took pilot's diploma 1911.

AUSTRIA.

The communiqué of June 30th says:—

In the South-Eastern theatre of war, as a reprisal for the Serbian attack near Sabar, one of our aerial squadrons early yesterday morning bombarded the wharf at Belgrade and the military camp of Orasae, south-west of Obreno, with very good success.

ITALY.

The communiqué of June 28th says:—

Certain activity is being shown by the enemy's aeroplanes, which have bombarded several positions recently conquered by us, but with little success.

* * *

The communiqué of July 2nd says:—

Hostile aviators continue their activity, making victims also among the civilian population. Our aviators effectively bombarded a column of troops and supply wagons near Appachiasella and also the railway station at Sandaniel.—CADORNA.

* * *

The following Admiralty statement was issued at Rome on July 2nd:—

In the Adriatic Sea yesterday a French aviator, Sub-Lieutenant Rouillet, dropped from a height of 50 feet two bombs on the Austrian submarine U 11. The bombs exploded under the water very close to the turret, apparently with success.

* * *

An Admiralty communiqué issued in Rome on July 4th says:—

This morning an Austrian seaplane appeared over Alberoni.

Being subjected to artillery fire from our anti-aircraft guns and chased by French and Italian aeroplanes, it made off rapidly towards the east, dropping a few bombs on the way, which fell harmlessly into the sea.

* * *

A message from Rome states that Admiral Thaon di Revel, Chief of the Naval General Staff, reports that an Italian airship bombarded and seriously damaged the Stabilimento Tecnico [the great shipbuilding establishment] at Trieste on the night of July 4th. The airship returned safely.

BELGIUM.

The "Telegraaf" (Amsterdam, July 1st) reports that the aerodrome at Ghistelles, near Ostende, has been destroyed.

* * *

The "Echo Belge" reports that two submarines and four destroyers are in Zeebrugge harbour. Allied aviators are regularly seen above the harbour dropping bombs.



ERNEST B. H. LANDER, R.I.S.

The

BEATTY

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Telephone:
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138

TO PROSPECTIVE PUPILS.

¶ The following questions should be carefully investigated before joining a school:

1. How long has the school been established?
2. How many certificates have been gained during this time?

¶ The latter question is of great importance to you; do not be satisfied by the smooth talk of secretaries and managers, but go to the Royal Aero Club, 166, Piccadilly, W., and ask to see the register giving the number of certificates gained at the school you contemplate joining and compare it with other schools.

¶ The Beatty School of Flying while at Hendon has turned out more certificates than the total of those taken at all other existing civilian schools in England.

¶ More men have taken their **commissions** from this school than the number who have taken **certificates** at all other civilian schools in Great Britain combined now in existence.

FOR PARTICULARS APPLY TO THE SECRETARY:
THE BEATTY SCHOOL OF FLYING Ltd.
 LONDON AERODROME . . . HENDON, N.W.

It is reported from Holland that at 9 a.m. on July 4th, an aviator appeared over Gontrode, near Ghent. He returned three times, always flying nearer to the ground, and dropped several bombs without causing important damage. After having been fired at with heavy artillery he disappeared in a westerly direction.

HOLLAND.

The "Telegraaf" (Amsterdam, July 5th), learns from Sas van Gent that that afternoon a French biplane with two English aviators landed on Dutch territory not far from the Belgian frontier. The crew thought they were in Belgium, and before their error could be explained they had set fire to the machine.

SERVIA.

The following official statement was issued by the Serbian Press Bureau at Nish on July 1st:—

On the morning of June 28th four hostile aeroplanes flew over the outskirts of Belgrade. On being fired at by our artillery they changed their course and made for Obrenovatz. One of the machines was badly damaged, and was forced to land on the heights of Bejanja, where it caught fire. The three others dropped bombs on Obrenovatz without any result.

CHINA.

The "North China Herald" publishes a very interesting diary kept by a German artillery officer during the Siege of Tsing Tao. The following extracts deal with aircraft:—

September 5.—This morning, at 10.30 a.m., we had a small change. A hostile biplane came over us from the land side at a height of about 1,000 metres. The aeroplane passed over the redoubts and then directly over our battery, and, circling round, dropped two bombs which did no damage. It then flew over the signal station and . . . office, where it dropped another bomb which also caused no damage. When the flying machine was over us, we distinctly heard a whistling like a shot flying through the air. Shortly afterwards we heard a bomb explode on the hillside about 30 metres away. It must have been a small bomb, as it only went about 50 cm. into the ground and made a hole of from 60-80 cm. in diameter. We do not know if the aeroplane was an English or Japanese one.

September 7.—Yesterday afternoon another aeroplane came. It was fired at by the batteries, but was apparently not touched. It was much too high—about 1,400 metres. The aviator did not throw any bombs. It was a seaplane.

September 13.—Yesterday morning our Aviator-Ober-Lieutenant Pluchow made a reconnaissance flight which lasted three hours. He saw Japanese troops near Tsimo,

where he was shot at by infantry. The wings of the aeroplane were hit nine times. No damage was done, as he was flying at a height of about 2,000 metres, and the bullets could not penetrate.

September 21.—Japanese flying machines come over very often. They always drop bombs, but hit nothing. This morning one came over us, at 8 a.m. It then went out to sea to get more bombs from the steamer (parent ship), and came back over us again at 10.30 a.m. Our people have at last realised that we can shoot at the fliers with our guns, i.e., howitzers. Until now only the direct fire guns have been used. To-day we had small 8.8-cm. sub-calibre guns (used for gun-laying) mounted. If the aviator comes over to-morrow, our battery is to fire at him, and we hope to bring him down. [Apart from aeroplanes, an entry here occurs in the diary which is interesting, in view of the charges brought against the Germans in South Africa.] A Japanese staff officer has been captured here as a spy. He was poisoning our water with typhus bacilli. He was shot yesterday.

September 25.—This morning two aviators came close to Tsing Tao. As they were heavily shelled, they turned round and went away. Our battery did not shoot, for, as you know, howitzers have not a range equal to that of flat trajectory guns. Let us hope he will come again to-morrow. He is almost sure to do so daily.

September 26.—At 7.30 a.m. two aviators came into view, but turned back.

September 27.—At 7 a.m. two more aviators came into view, but they did not stay long.

September 30.—This morning our observation balloon went up to a height of between 1,500 and 2,000 metres. The observer located an enemy's howitzer battery behind the nearest heights. BX11 opened fire on this. The balloonist signalled hits by flag.

October 3.—At 1 p.m. an aviator was sighted, but did not come near us.

October 5.—At 7 a.m. this morning an aviator appeared and was shortly followed by two more. Some bombs were thrown. They were using two biplanes and a monoplane.

October 8.—Yesterday our observation balloon broke away from its moorings near Ilits Berg. It was proposed to send it up without an observer to try to draw the Japanese artillery fire, as we wished to know at which place behind the hills they are digging in their batteries. The wind was, however, too strong, and the cable broke.

October 11.—Another aeroplane came in sight to-day. [This is the last entry dealing with aircraft.]

S.-W. AFRICA.

It was officially announced in Pretoria on July 1st that two British aeroplanes successfully bombed the enemy's troops and trains at Otavi on June 29th.



The Island of Urk, showing the pier along which interned officers not on parole take their daily walk under guard.

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CANADA.

The "Toronto World" (June 4th) says:—"A gang of men is preparing ground at the rifle ranges for land flying for the Curtiss pupils. One machine is there already, and another will be taken out shortly. When the pupils graduate from the flying boats they will go through land flying at Long Branch. The pupils on the waiting list will then be taken to the island and after graduation to Long Branch will be given a second-class passage to England. Pilot Carlstrom, of the Curtiss School, Hammondsport, N.Y., arrived in Toronto yesterday, and will act as instructor on the land machines."

* * *

A note from Mr. Sam Pierce, formerly of the Blériot Company, and for a time instructor at Brooklands, intimates that he was, at the time of writing, acting as instructor at the Curtiss School at Toronto. As one of the steadiest and most experienced pilots now flying, he should be a most valuable addition to the school, and his faculty for making friends should make his task of teaching all the easier.

SUMMER COMFORTS FOR THE R.N.A.S.

Although there is, naturally, less demand for physical comforts in the summer than in the winter, requests still come in to the R.N.A.S. Comforts Fund from men on active service, and as the Fund's cash is now exhausted the editor of THE AEROPLANE earnestly begs those who are interested in the Air Service to send along contributions, in cash, so that the latest requests may be satisfied.

The men with a Kite-balloon Section at the Dardanelles ask for thin underwear, handkerchiefs, and short drawers. There are not any of these things in stock, because what was left over from last year consists of thick winter clothing.

Another Kite-balloon Section in France asked recently for gramophone records. Mrs. Sueter was able to send 16 double records, also tobacco, cigarettes, magazines, and mufflers, the latter being needed for night work.

It must be remembered that the Kite-balloon Sections have been raised comparatively recently, and, therefore, did not receive any of the comforts which were liberally supplied by the friends of the Air Service during the winter.

Will readers of THE AEROPLANE please respond to this request, and send contributions as quickly as possible to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.?

THE LATE THE HON. C. S. ROLLS.

July 12th is the fifth anniversary of the death of the late Hon. C. S. Rolls, who was killed on his Wright biplane at the Bournemouth Aviation Meeting in 1910. As is generally known, Mr. Rolls was one of the most renowned pioneers of aviation in this country, and it is wished as a mark of appreciation and respect to commemorate this date in some particular way.

Friends and admirers of Mr. Rolls and of his achievements cannot better testify to the honour in which his memory is held than by helping the cause of aviation for which he sacrificed his life and by subscribing to the deserving Flying Services Fund, which has been established by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependents of those killed.

As early as 1895, as an undergraduate at Cambridge, Mr. Rolls drove a Peugeot car, preceded by the archaic Man-with-the-Red-Flag. He was the first motorist to drive the late King Edward, and was the winner of the Tourist Trophy in 1906. In the same year he was third in the first Gordon-Bennett Balloon Race.

In June, 1910, he flew from Dover to Calais and back in one continuous flight, and was the first aviator to accomplish this feat.

With the co-operation of Mr. Claude Johnson and Mr. Royce, Mr. Rolls founded the famous Rolls-Royce firm, who are the makers of the car which is recognised as leading the world in car construction, and he was one of the founder members not only of the Royal Automobile Club but also of the Royal Aero Club.

His foresight, pluck, enthusiasm, and enterprise during even so short a life, to say nothing of his untimely end, caused by his devotion to a movement which at this time is destined to exert so portentous an influence on the result of this world war, stands out as a shining example and inspiration to the youth of all time, as showing that, no matter what may be their social position, their highest honour lies in devoting their best energies to the advancement of human progress, and that an honourable commercial career is not incompatible with social position.

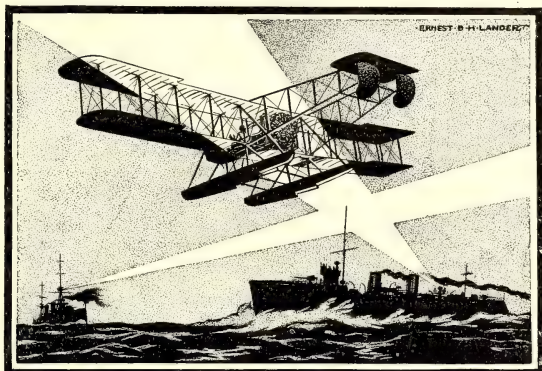
Subscriptions for the Flying Services Fund, of which Lord Kinnaird is the honorary treasurer, should be sent to the Royal Aero Club, 166, Piccadilly, W., or Messrs. Barclay & Company, 1, Pall Mall East, S.W.



A Glimpse of Toronto over the tail of a Curtiss Boat now being used for school work there.

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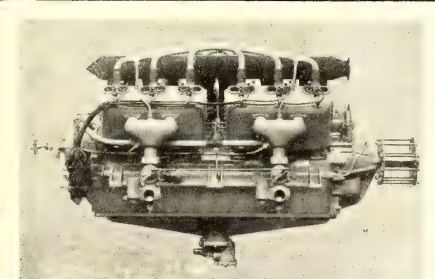
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

AS TO EFFECTIVE AEROPLANES.

Apocryphal a statement in this paper on June 16th that certain aeroplane makers refused to tender for B.E.2c's, whereas others were so misguided as to promise deliveries of these machines in six weeks, "under the impression that they were to be given an ordinary problem in aeronautical engineering, and not an exercise in a kind of airy differential miscalculus," a pilot who evidently has some acquaintance with flying, coupled to a very slight knowledge of aeroplane construction, writes to the effect that this paper is only inviting ridicule by such silly remarks. He points out that the B.E.2c. is about the best machine of its type there is in the Service. So far, and no further, his argument goes.

Nobody has ever disputed the fact that the B.E.2c is an excellent flying machine. This paper's quarrel with the R.A.F. is that it allowed the B.E.2c. to be sent out for active service fitted with a 70 h.p. motor, when it was designed for 100 h.p., and actually needs 80 h.p. at least to be effective. Secondly, the original drawings were so full of mistakes and so much unnecessary work was involved that first deliveries took something like six months.

Any ordinary aeroplane of similar size can be built in six weeks, and it is still possible to accelerate the output of B.E.2c's by simply redesigning details throughout the machine without in any way altering its special aerodynamic properties. Such redesigning might very well decrease the time taken in building these machines by twenty-five per cent.

At the same time, the strength of the machine would be in no way decreased, although it is just possible that it might not keep in tune for quite so long at a time. This is a point which matters very little on active service, simply because the machine which survives for more than a month has really done rather well.

If only some of the young officers who are so devoted to this machine, simply because it flies easily, would try and realise that the duty of an aeroplane designer is not merely to save them trouble, but is rather to supply the maximum possible number of effective aeroplanes in the minimum possible time, and that effective aeroplanes are those which climb and fly faster than those used by the enemy, these young officers will doubtless become more useful as minor component parts of the King's Armed Services.

A QUESTION FOR THEORISTS.

A correspondent writes, asking why, by placing the upper plane of a biplane ahead of the lower one, there is an increase in lift and an increase in lift-drift ratio. There does not seem to be any special theory to account for this, but it is presumably due to the fact that, when the machine is actually climbing, and is therefore flying at a very coarse angle, the lower surface of the upper plane is not blanketed to the same extent by the up-current from the upper surface of the lower plane, as it would be if the planes were vertically above one another when the machine is flying at a fine angle. In which case the lower plane would be leading when climbing.

For a similar reason a machine with staggered planes will almost always pancake more gently than one with the upper plane vertically above the lower one. If any reader can suggest a better theory, the editor would be glad to have it.

TO REDUCE INSURANCE PREMIUMS.

Car owners who take the trouble to insure their cars will do well to note that the underwriters of the Dreadnought motor policies at Lloyds, having realised the importance of the protection afforded to drivers and passengers when cars are fitted with Triplex safety glass screens, have agreed to give a reduction of 10 per cent. on premiums of all private and public hire motor vehicles so fitted.

A PERSONAL NOTE.

To the Editor of THE AEROPLANE.

Sir,—I have been reading with much interest the admirable article on "Zeppelin Strafing" in your issue of June 23rd. As I come in for some "strafing" also, may I say a word?

Though I had the honour to be elected an honorary member of the Sussex Aero Club, my lines on Warneford to which you refer (they appeared in the "Daily Express") were—in a flying sense—the work of a layman, and I did not expect to come under the lash of expert criticism. As an ex-Territorial officer (out of the Service on the age limit, though I, of course, sent in my name as willing to serve), I agree with you, sir, that it is not cowardice on a soldier's part to inflict all the damage he can upon the enemy while incurring as little risk as possible to those under his own command. But my use of the word "coward" in relation to Zeppelins was in reference to their attacks upon civilians and unfortified places. I accept your correction, and should not have troubled you with this letter were it not that, by some misconception, you describe me as "connected with some ultra-Protestant pamphleteering of the hysterio-Kensittite type."

I write so little now—having for the last eight years, and at the urging of the late Lord Roberts, devoted almost the whole of my time to working in the cause of national defence, and so in support of a strong Navy, strong Army, and strong Flying Service—that anyone, most of all a busy editor, may be pardoned for not knowing what my little books were all about. But I assure you, sir, that I have never at any time taken part in the squabbles between the Churches, be they Roman Catholic, Anglican (High or Low), or Nonconformist, and least of all on the lines—though I have never read any of his publications—associated with the name of Kensit.

I should not trouble you with this letter were it not that—something of a sportsman myself—I prefer not to be described, even if by reason of some misunderstanding, as a "smug" and a "Stiggins," in the columns of a journal written by and read by sportsmen of the best British type.—Sincerely yours,

COULSON KERNAHAN.

Savage Club, Adelphi Terrace, London.

[After reading such a thoroughly good-natured reproof, what can one do but tender Mr. Coulson Kernahan very sincere apologies? Long may he flourish and continue his patriotic work, for after the war we shall doubtless have harder work than ever to convince the pacifists that this war is hardly even a dress rehearsal of the real Armageddon.—C. G. G.]

A HYMN FOR AVIATORS.

O Lord of might and power,
Stretch forth Thy saving hand,
Protect and guard the airmen brave
Who serve the Motherland.

Let no strong wind prevail
O'er them when up on high,
Propelled through clouds, unseen below,
In solitude they fly.

O Lord, we look to Thee,
That in Thy loving care
Thou wilt protect from storm and wind
Our brave men of the air.

[These verses were written by Miss Alice H. Freeman, of Rickmansworth, who is only thirteen years of age, and they show how the work of our aviators impresses the younger generation.]



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An Officer writes:—I enclose "glasses" which you supplied me a short time ago, and would be much obliged if you could repair same.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

PROSPECTS AND REVERSIONS.

" . . . And every winged fowl, *after his kind* . . . cattle and creeping thing, and beast of the earth . . . and it was so. . . ." Date, the Fourth Original of grey and rose, ages before the ancient record was written that yet abides. And it has been just that way ever since, with every thing created, or book written, or work done that was ever worth a damn to anybody. So for the purpose of any little work of this sort, if it is going to have the slightest pretension of the most ephemeral value for anyone who cares to read it, it is *kind* that matters mainly; and an ounce of construction comparatively dealt with is worth a ton of kindness to the mere example. What, prithee, would be the use of a work on comparative anatomy that first described the masseter muscle-fibre of the cat-kind, or their short tracheas, and then praised these as the standard "best-ever" details of beastie-construction? The contraries, in the giraffe or any other gee, might need curious explanation. Is the reptilian lizard a mistake of the great Anatomist, because it has no vomer-bone in its skull, like the batrachian frog, or the Hun-beast? Be comforted, my Cornish reader. Your coccygeal bone does *not* prove that your remotest ancestor had ever a tail. . . . All we are or do is just after its kind; neither good nor bad of itself, but just so, as in the beginning . . . and the creation-fact comes a million miles in front of the catalogue or the specification.

UNCONSIDERED PRAISE.

So I affirm hereby that the greatest bane and hindrance of the motor-industry and the joyous pursuit of motoring hitherto has been the mush and molasses, the mud-honied unvarying praise of the motor write-up that only clogged progress, far from suggesting a single step ahead to betterment. Written as a pure enlargement of catalogue and specification, or at best by assiduous laymen, prone to accept any statement because they could not contradict it, and competent at most as drivers, to record noise or silence, ease or labour, on second-speed hill-climblings—this sort of trade-goods led nobody anywhere except into confusion. One read much the same things about the Zeta car of the 1910 hatching as of the Alpha of 1905 or 1900: which had been equally praised without imagination, and now stood to be damned by the latter evidence: that also waited for the discard of next year. For when you are fain to forget the whole as soon as you can, you will hardly remember any detail as to whether it was worth keeping for future use. So uncritical always, and unmindful of the past as unsuggestive for the future, your work helps neither commercial maker—who is by no means omniscient and has generally seen far less than the perpetual student of these technicalities, whose *wunderjahre* never end—nor the uncommercial user.

That unprofitable result, at least, I have tried to avoid, as I promised, from the outset; and for that very reason have never mentioned the Brown, or the Jones, or any other aeromotor, except as an example after its kind, more or less meritorious, as it appears to me on probable and actual results. You either trust my opinion or you don't *Ca m'est égal*. In other words, you may pay without going into the show. That is why—and as much for his own sake as anybody's—I shall hope to treat Robinson's and any other just in the same way. For I have pride enough in my craft as mechanic or scribe—and in the credit thereof—to believe that if his production be really good enough for me to notice at all, much more dissect and analyse in this way, it will probably be interesting enough to my readers, and on its own account; so far as it stands comparative analysis in its company.

Therefore, it would be a pretty good motor anyway, after its kind. There is no certain "best," with a better any day waiting discovery; but after all *au pays des aveugles, même les borgnes sont rois*, despite the known standard of double sight.

CURTISS DETAIL PRACTICE.

It is exactly such considerations as these, as well as the remarkable blend the Curtiss motors represent, of certain of the cleverest details of European motor practice with the American knack of weight-saving and light mass-construction, that make them so interesting. Much of this peculiar quality has already been illustrated in the previous general description: but to avoid any mistaken conclusions that might arise from an abstract comparison of European with American methods in any detail, I should say that in all cases where the utmost refinement has been sought, irrespective of any other consideration, the latest European methods have been employed; to ensure not only perfection of fit, but durability so far as material as well as treatment can achieve that result. Thus in the case of the bearings, they are said to be formed by first halving a block of metal, then machining the united halves round, then reaming the round through to half-a-thousandth fit with the journal or crank-pin: and finally cleaning up the interior faces of the absolute twin semi-circles thus obtained to a glass-like finish. Which, for the desired result, would seem to be nearly as rapid as the most accurate shimming method, mathematically truer than the most delicate and exacting scraping can ever be, and withal less costly. Incidentally, to correct another current misapprehension, I may say that the cam-shaft ends merely take an extremely close-fitting seating in the aluminium of the crank-chamber, not a bearing in any sense; as the casual observer—who might even be on Service in some sort—might suppose.

TESTS EXTRAORDINARY.

It is even more interesting to remark, as a matter of evidence of working results, exactly what Curtiss motors have been called upon to endure, according to reliable testimony. It would be thought that any given water-cooled, oil-lubricated motor would at least be allowed a sufficiency of water in its jackets—all it could take, in fact—and plenty of oil in its crank-chamber and lubrication system generally; that is if a definite working test, and not purposed destruction, were intended. Unless the motor had what only the Blake motors among some hundreds of makes ever had—that is, a separate walled compartment for each crank—you would hardly set it on its tail, and run it for half an hour without literally asking for seizure forward. Which escaping, the miracle would go to the credit of the motor at least; and hardly count to your fitness to test anything more mechanical than a grindstone.

Likewise, if you starved it of water, or by the previous mishandling ran the motor over-hot to seizure-point, you might even expect that the best of soldered connections anywhere—anything short of the brazed joints forbidden by the special design of the said connections—would begin to run, and let out the water. So heated to about double the normal working temperature, one would be astonished if anything else happened. If, also, the solder filling in the welded jacket joints ran, yet the joint itself remained unaffected, that fact at least would go rather to the credit of the motor than to your ability. One might even say that motors surviving such treatment under technical hands at a depot would cheerfully come through the worst that the most casual pilot on actual service could possibly inflict.



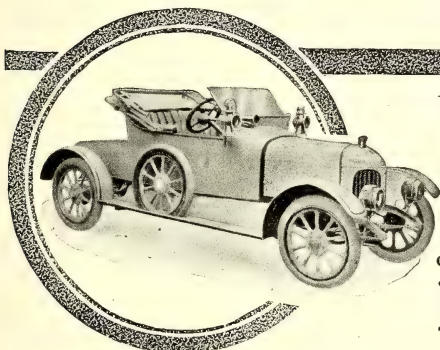
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Yet this curious playing—I think it sounds like syllabub—with a motor, is what certain Curtiss examples, taken at random from stock, seem to have contrived to endure. And—since those who designed them as water-cooled motors might be presumed to know how and where to fit the essential pump so that it would stay in place—one can only suppose that the three stout bolts that have hitherto supported that pump from the end of the crank-chamber are quite as likely to be able to hold it there permanently—so long as the motor is properly run as such—without any extraneous aids of ingenious design.

ADJUSTING GADGETS.

Now, if there be one thing which bears less interference than another, it is the accessory design of a motor. Harmonising this with the mass is never so difficult as in mono-cylindrical mounting, because it necessarily lacks the broad naked surfaces of monobloc types, which enable accessories to mould in more readily, and there is, consequently, less scope for appropriate attachment points. However, V-type motors, such as the Curtiss, more or less escape this defect—the more when the valve-gear mainly consists of close-lying tappets—because of the central space which—whether the top of the crank-chamber be flattened or not—not only gives an extra range of such points, but houses accessories far more snugly than is possible in other types. This possibility is most displayed in the larger Curtiss models—the latest 160-h.p. and 170-h.p.—in which both the water-pump and magneto are mounted inwardly of the encased train of gearing behind, from which they are driven. In both these—as will be seen in the last two rear-view illustrations—the carburettor is suspended centrally, which gives a shorter induction with a better-equalised length of mixture travel. Exactly why the same arrangement is not embodied in the 75-h.p., the 90-h.p., the 100-h.p., and the previous 160-h.p. models is not so clear: unless it be that the necessary size of the water-pump would cause it to crowd the magneto if it were mounted close by it, instead of where it is, compactly enough on the tail of the crankshaft. At the same time, one must admit that leaving the shaft-end clear assists the fitting of a mechanical starter: always an advantage, if not an essential in high-powered motors.

CURTISS LUBRICATION.

As to the lubrication, one sees that no chances of destructive tests will be taken in the new 160-h.p.; and, possibly, later editions of the others will follow the same system. The splash method has been entirely superseded by fitting three rotary gear pumps, the largest of which forces the oil from the supply tanks under high pressure to every bearing and through the connecting-rods to the cylinder walls, while the two smaller, located one at each end of a drainage channel in the bottom of the lower half of the crank-chamber—which last is consequently much shallower than in previous models—pick up all the oil that returns from the bearings and other surfaces, and pump it back through strainers to the supply tanks. In fact, unless one can fit a really effective gravity-cum-pressure system, mechanically force-fed lubrication is really essential for an aeromotor of any size or length; in none more than in one of the V-type.

In discussing the V—or any other—type of aeromotor the final question is the work it has to do; which is to drive the "windstick," propeller or tractor; and this under totally different conditions from those which obtain on the road or afloat. So, out of these, arises the further question of direct or indirect—geared—drive. This does not become easier, when it is remembered, on the one hand, that many V-type models of distinguished origin—whether much in use or not—such as the Renault, De Dion, Farcot, R.E.P., Sunbeam, and others, use some application of indirect drive, while in others—even of the same make—such as the Wolsley—both direct and in-

direct are used in the various powers; and still others, such as the Curtiss models without exception, only employ the direct method.

To decide the point, however, requires many considerations. Personally, I believe that the air in which the propeller has to work is the first one, and that that condition should most govern the choice of the propeller or tractor itself. For instance, to take extreme cases, one can hardly believe that a given propeller that would suit the dryer, thin atmosphere of the United States, Australia, or Northern Africa well enough, would give as good results in the denser air of Northern Europe. One remembers the difficulty of choosing suitable propellers experienced by European pilots in various American contests three or four years ago.

But the atmospheric density and propeller question being settled, it is for those concerned to decide whether a high or a medium speed motor will better suit the conditions thus established. It almost stands to reason that, other conditions being equal, the indirect or geared-down drive does suit a greater variety of working conditions; but there, again, one must be sure that the structural design of the motor lends itself to that system without sacrificing any essential qualities or peculiarities. Therefore, as regards the Curtiss, seeing that even at its maximum of 1,500 r.p.m. and normal of 1,200 r.p.m., it is by no means a high-speed type, as aeromotors go, we may safely assume that its direct drive has been found to suit its average of working conditions better.

Finally, it being said that the Schebler carburettor is invariably, and the Berling magneto generally, fitted to all Curtiss models, there remains only the matter of adjustment and upkeep to discuss. The extreme accessibility of the valve gear makes adjustment to the perfection of working trim easy enough: for apart from what is obvious, all that has already been recommended in other makes applies equally well. And for the rest, from all that can be learnt from those whose experience of the Curtiss motors has been the longest, the ignition adjustment—also copiously dealt with some time since, and equally applicable here—is the main issue: the firing taking place in the conventional order of eight-cylinder V-type motors—after their kind.

(To be continued.)

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The frame is of pressed steel, and allows a good steering lock. The springs are semi-elliptic, and are provided with grease cups. The valve tappets are adjustable, and the valves are properly cased in. The crankshaft has three bearings, and lubrication is by a rotary pump. A Solex carburettor is fitted. Sankey pressed steel wheels are used, with 700 by 80 mm. tyres. There are three speeds and reverse, the shaft driving a worm gear on top of the axle. Altogether it is one of the neatest little cars yet produced.

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[One hopes they will chose the waters by preference.—Ed.]

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Small Factory Output and How to Speed It.

BY GEORGE H. MANSFIELD (Joint Author of "The Motor Accountant" and "Repair Shops and Stores Accounts").

INTRODUCTORY NOTE.

Much has been written in the daily and weekly Press concerning the delay in the output of munitions of war, and since Lord Kitchener's speech in the House of Lords on March 15th sundry and varied reasons for such lack of output have been freely discussed. The major portion of these reasons are doubtless good in different districts, but there is always one *sine qua non* which must be the basis of the output from all factories—that is, "efficient organisation." Without this the workers may be making their twelve hours' work each day, and yet the result of such work need not necessarily mean rapid output of finished articles or deliveries to date.

In the following articles I endeavour to give some hints which may assist those responsible for the organisation of what I have called "small factories," i.e., factories employing not more than four to five hundred people, or less. The strongest point in any speeding-up system must be efficient organisation, or the speeding-up can do no good.

Before starting on this work I do not think I can do better than quote the following extract from Lord Kitchener's speech in the House of Lords on March 15th under the heading—

"A GRAVE WARNING."

"I cannot too earnestly point out that unless the whole nation works with us and for us not only in supplying the manhood of the country to serve in our ranks, but also in supplying the necessary arms, ammunition, and equipment, successful operations in the various parts of the world in which we are engaged will be very seriously hampered and delayed.

"I have heard rumours that the workmen in some factories have an idea that the war is going so well that there is no necessity for them to work their hardest. I can only say that the supply of war material at the present moment and for the next two or three months is causing me very serious anxiety, and I wish all those engaged in the manufacture and supply of these stores to realise that it is absolutely essential not only that the arrears in the deliveries of our munitions of war should be wiped off, but the output of every round of ammunition is of the utmost importance, and has a large influence on our operations in the field."

Being actively engaged myself in the commercial and organisation side of a large factory busily employed in the manufacture of munitions of war, thus endeavouring to expedite and facilitate the production of such munitions, I trust that readers in similar positions may profit by the points raised in the following chapters, although perhaps somewhat briefly dealt with.

CHAPTER I.

LIMITS, METHODS, AND HINTS ON MANUFACTURE.

In the manufacture of any article there must necessarily be limits within which the component parts can be made so as to render the article efficient for its purpose, and in the manufacture of munitions of war these limits must necessarily be fine, so that in these times the education of workers to working to these close limits is a matter for very careful supervision.

The reason that these limits are so fine is that, in these days of pressure, such articles as guns, for instance, are not manufactured wholly in one factory, but the respective parts are made in different factories; these various component parts must therefore be interchangeable. In some cases bare dimensions only are given, although with gun parts usually a "gauge" or "pattern" is supplied so as to ensure a good fit being produced; in many cases, however, a blue-print only is supplied.

Each worker engaged on the manufacture of these articles must be made conversant with the exact requirements—i.e., a good drawing of the part, the exact dimen-

sions required, and the limits within which the parts are to be made. It is almost certain that a large quantity of component parts could have been produced before now for use on munitions of war if the workers had been properly provided with data such as already mentioned when the work was first commenced; there are many instances where weeks of work have been spent and the parts have been finished, but, owing to lack of supervision, "economy" in tools, and lack of careful attention by those in charge, the parts have been rejected and scrapped. The worker has gained his pay quite justly, but the employer has suffered for his ignorance and the country has thus waited for its munitions of war.

In addition to these details already mentioned as to limits of manufacture, the worker should also be acquainted with the material specified to be used; and, further, if it be deemed necessary, owing perhaps to the worker's inexperience in the particular kind of work engaged upon, he should be supplied with details as to the precise method of manufacture. In these times it is a common thing for diamond-cutters, watchmakers, fancy jewellery workers, and scientific instrument makers to be engaged on gun parts, shell parts, aeroplane fittings, and such articles of delicate nature in manufacture: these are the workers who are fitted for this work; they are used to fine limits, but they are not used to fitting up hand-grenades or making shell parts; they can learn quickly, though, and having been put in the way of the work, after the salient points have been brought to their notice, they will turn out as efficient an article in this category as ever they did a watch or diamond ring.

Some firms who have set themselves out for work on the munitions of war, because they could find no other, and therefore because Necessity has once more proved the Mother of Invention, as it were, have issued pamphlets to their workers containing the salient points of manufacture and the organisation generally of the business. These booklets have been most welcome to the men; the more diligent of them, and particularly the charge-hands, have studied them carefully and realised that, whatever the bones of contention 'twixt master and man, the employer is endeavouring to help the worker and take him into his confidence all with one desire—i.e., to turn out work which will be accepted by the Government Departments and thus expedite the supply of munitions.

The contents of such a booklet must necessarily vary according to the particular kind or kinds of work undertaken, but principally it may be the same for small factories now dealt with. As an instance, such a pamphlet would be provided either in typewriting by "Roneo" process or printed and bound with thin cardboard covers which can be obtained in quantities quite reasonably, while loose-leaf transfer cases can be used for the foremen, charge-hands, etc. The contents should combine an opening page on the routine of the business generally, followed by an index to the contents, which may be as follows:—

- (a) General limits of manufacture.
- (b) Timekeeping and method of recording time.
- (c) General rules of the factory.
- (d) Hints on manufacture.
- (e) Lists of minimum stocks kept in stores (if necessary).

To these headings others can be added from time to time as and when different kinds of work come along, while the minimum stocks will be revised when necessary. It will be found that the principle of issuing a pamphlet such as this will not only make the work easier for the men and thus give better and quicker results, but it will tend to make each man happier in his work and therefore less likely to want to move to what is known among the workers as a "more comfortable shop."

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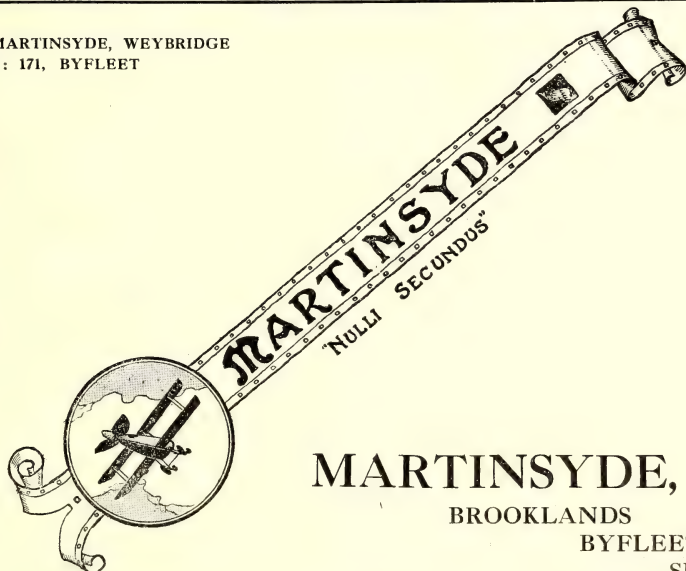
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(Subject to alterations and additions from time to time by written notice exhibited on the Notice Board).

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The Shops hours on weekdays are: 6.30 A.M. to 8.30 A.M.; 9.0 A.M. to 1.0 P.M.; 2.0 P.M. to 5.30 P.M.; 6.0 P.M. to 8.0 P.M. (except Saturdays, when the Shops close at 12.30 P.M.)

TIME CLOCK.

Employees must *Clock In* at all times, but the Clock is closed at the following times, after which the time is booked in with the loss of a quarter or quarters by the Timekeeper : 6.33 A.M., 9.3 A.M., 2.3 P.M., 6.3 P.M. Employees cannot start work after these times without the permission of their Charge-hand. Employees are only required to Clock Out when ceasing work for the day.

NO EMPLOYEE MAY RECORD ANYONE'S TIME BUT HIS OWN.

WAGES.

Time will not be paid for unless recorded on the Time Clock. Wages are paid at 12.30 P.M. on Saturdays : wages are handed to Employees in transparent envelopes, and no mistakes will be recognised after the envelope is broken open. Wages are paid each week up to 5.30 P.M. Thursday evenings. Written notices of any alterations to the foregoing or amendments thereto are exhibited in the Shops and at the Timekeeper's Office.

INSURANCE CARDS.

Insurance Cards are held in the Timekeeper's Office, and duly stamped each week with the stamp representing the Employee's and Employers' contributions.

INSURANCE CARDS MUST BE HANDED IN TO THE TIMEKEEPER'S OFFICE AS SOON AFTER ENGAGEMENT AS POSSIBLE.

At the end of each Insurance period, or on leaving, the cards will be returned to the respective employees. New period cards must be handed in as quickly as possible.

Men may see or borrow their cards at 5.30 P.M. any day except Saturdays: a receipt will be required when a card is borrowed.

TOOLS AND DRAWINGS.

Any workman failing to comply with any Rules made regarding the return of Tools and Drawings will be liable to suspension until a satisfactory explanation can be given. Workmen losing tools, or breaking same without good cause, are liable to have the half cost of same deducted from their Overtime pay.

When leaving the firm's employ the Tool discs must be all handed to the Timekeeper before pay will be made. Tool checks that cannot be accounted for will be charged at 75 per cent. of the value of the Tool represented. Any such deductions will be duly refunded on the return of the missing items. All drawings issued to the Shop are the property of the Company and may not under any circumstances be taken out of the Factory or copied in any manner.

Any workman found breaking this rule will be liable to instant dismissal.

ACCIDENTS.

Anyone meeting with an accident must as soon as possible thereafter report the details of the same to the Works Office. Claims for compensation or part pay cannot be dealt with unless the details of the accident are reported to the Works Office within 24 hours of the occurrence. Anyone meeting with an accident can be given First Aid at the Works Office for minor accidents, or for bad cuts or accidents on application to the Gatehouse.

SMOKING.

Smoking is strictly forbidden on the Factory premises at all times.

MESS ROOM.

A Mess Room is provided for meals; tariffs of charges are exhibited therein.

Access to the Mess Room during working hours is barred to all and messengers may not be sent.

CHANGE OF ADDRESS.

It is important that all changes of address be notified to the Timekeeper as soon as possible.

CHAPTER II.

ARRANGEMENT OF FACTORY DEPARTMENTS.


The arrangement of the different departments of a factory must necessarily materially assist the efficient output of work. It need not entail the actual building or construction of premises, but, given the premises, providing they are at all adaptable, the arrangement of such premises is important.

One assumes, of course, that it would hardly be good arrangement to put the drawing-office over the gas-engine or power press plant, but even without such an objectionable situation there are factories arranged in such a way that articles may easily be lost in transit from one department to another, or a lot of time wasted by individual employees in going from one place to another unnecessarily.

The aim must be to keep the men or girls "on their jobs" as much as possible, and the only way to do it is to arrange the departments so that they do not have to go far, and when away from the bench or machine they are still in view of either their charge-hand or some more responsible person.

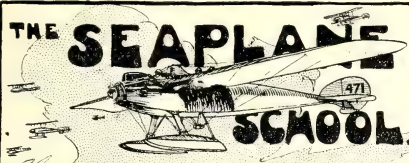
In cases where factories have been set up in large buildings, or, say, are of 180 feet span in 25-feet bays, it is not such a difficult matter; but where there are two floors with machinery on both, and walls and pillars dividing the place up into a veritable warren, then organisation becomes most difficult.



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Taking the instance of a large place such as suggested, 180 feet span with 25-feet bays, for a factory where a quantity of machinery is employed; the machinery could occupy one part, preferably the front, with stores at the side, superintendent's offices, viewiers, and perhaps markers-out in the next part, while the back would be occupied by the hand-workers—i.e., bench-hands, metal-workers, smiths, welders, etc.; and the last bay—i.e., the front of the building—by offices, with other departments at the sides.

At the offices end it can be presumed there would be the main entrance; the works entrance, with the timekeeper, might be on the side, and the receiving and despatch department on the other; while there should be passages down the sides of the shops for convenient access thereto.

From these passages there should be the lavatories, both for men and women; an arrangement such as this would minimise the necessity of the various employees leaving their respective shops during working hours and always keep them confined in the building.

The sketch plan illustrated will show the arrangement more clearly, although perhaps only adaptable to a place such as an exhibition hall, skating-rink, or premises specially constructed.

The foregoing is intended only as a brief suggestion, at the same time demonstrating those salient points all of which materially assist towards the easy administration of the work going through the shops.

By arranging the departments as shown in the plan between the machine and fitting shops, the workers in both shops can be supervised well, while the need for the respective foremen and charge-hands to go far from their work is eliminated and thus a great deal of time is saved. The close arrangement of the lavatories is essential to-

wards obtaining as many hours' actual work from the workers as possible; it is found in experience that where the lavatories are some way from the shop, or more particularly, outside the building, not only are there usually only 75 per cent. of the men working at once, but also those away will remain much longer than if the lavatories are practically in the works and near the shops.

The position of the finishing, packing, and despatching departments, the latter of which will also be the receiving department, is best near the entrance, not only because the carriers can be dealt with direct, but the checking of goods received and despatched is at once simplified.

Coming to the question of office accommodation, these can be conveniently arranged around the entrance as shown on the plan, and if necessary in two floors, but they are connected directly with the factory.

The necessity for light and well ventilated accommodation for the office staff is of great importance, in that while a machinist or fitter may be able to carry on his work by electric light and in a closer atmosphere, the office staff are working entirely with their eyes and heads and must therefore become stale and flagged very much quicker than the man in the shop whose chief energies are made with his hands.

Except in the case of the technical staff, who require to be in touch frequently with the superintendents and foremen of the shops, the majority of the necessary inter-departmental communications are made on the telephone or by written memos, the latter a most desirable method in most cases, since the question of record is invariably essential, while the use of internal telephones saves people from leaving their work and frequently enables them to proceed where an interview may waste time.

(To be continued.)

THE ACCELERATION OF AIRCRAFT PRODUCTION.

It seems reasonable to suppose that when the Ministry of Munitions starts seriously to turn its attention to aircraft production one of its first actions will be to recall from the Army all men skilled in aircraft work—just as the French did within a few weeks of the start of the war. There must be hundreds, if not thousands, of men with experience of aeroplane building now in the ranks, and, no doubt, their former employers would be very glad to have them back.

It also seems likely that in many cases the employers may have lost all trace of the men, through their changing from one unit to another, or through merely losing their addresses, so it occurs to the present writer that this paper may be of use in finding them. Numerous letters from ex-employees of aircraft firms reach this office, either from the men themselves asking questions about machines or pilots, or asking for the addresses of their subscription copies to be altered, or else the letters come through friends and relatives. Anyhow, it is fairly evident that very many of these men still get and read THE AEROPLANE every week wherever they may be.

Therefore, it might be well if any of them who think they could be more useful making aeroplanes than carrying a rifle were to write to their former employers, and give their present postal addresses. If it so happens that some are not anxious to go back to the shops they have left but are willing to work in other shops, they might send to this office their names and addresses and the name of the firm for which they have worked, so that we may have a list of them in readiness for the moment when it may be needed.

* * *

Aeroplane constructors who are engaged upon the manufacture of B.E.2c. biplanes may find some difficulty in producing metal fittings at the same rate as the wooden

parts. In this event it will be well to remind them again that a manufacturer of the same machines has laid down extensive plant for the making of "tin clips," and can give immediate deliveries at good prices of the following parts:—93, 71, 72, 73, 74, and 77, drawing 4065; 35, 4165; 24, 26, and 27, 4008; 26 27, 28 and 29, 4051. Samples sent by return post with quotations. Sockets for fuselage plates (93, 4050) as accepted by A.I.D. and I.A.D. Delivery in 6 days at 38s. 6d. per gross; also drop-stampings, hinges, parts 20 and 21, drawings 4029, at 39s. 6d. and 36s. per gross, respectively. Inquiries solicited. Goods supplied to samples approved. Box 656, care of THE AEROPLANE.

The same manufacturer can give small deliveries of 14 and 16 gauge sheet steel, R.A.F. specification 9a, to any other manufacturer absolutely held up. Box No. 656a, care of THE AEROPLANE.

* * *

A well-known firm of light-car manufacturers, Hurlin & Co., Ltd., of Mare Street, Hackney, N., are prepared to undertake woodwork, metal work, engine work, fitting, or even complete machine building under the supervision of constructors' inspection.

The principal of the firm, Mr. Hurlin, has been closely associated with aircraft building since 1909, and he is well qualified to execute any orders his firm may undertake. As there is plenty of floor space available, there are proper facilities for erecting.

* * *

Aeroplane constructors will be interested to learn that the Midland Automobile and Engineering Company are prepared to receive inquiries for the manufacture of metal parts to specifications. The principal is an experienced chemical engineer, and the firm is prepared to undertake any small repetition work that may be offered. Inquiries should be addressed to Old Stratford, Stony Stratford.

WOOD FOR ALL PARTS OF AEROPLANES

Machined to your Sizes or Sections.

Best Quality Silver Spruce, Ash, Walnut, 3-ply etc.

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LEARNING TO FLYAll those who intend to learn Flying or who are
interested in how men fly should readPrice 3 6 net. **"The Airman"** Price 3 6 net

By MAJOR C. MELLOR, R.E.

John Lane, The Bodley Head, Vigo Street, W.

"ABSOLUTELY INDISPENSABLE FOR PUPILS."—The Aeroplane**A BOOK ON ENGINES.**

Though it has little to do with aero engines, the second edition of "The Internal Combustion Engine," by H. Wimperis, M.A. (Cantab), A.M.I.C.E., A.M.I.E.E. (Constable, 6s. 6d.), is a book which should be studied by all who have to do with internal combustion engines of any sort, for it gives a general idea of the various types which enables one to form some kind of estimate as to the relative efficiency for weight or size between, say, gas engines, producer gas engines, oil engines, Diesel engines, and petrol engines. The writing is, perhaps, not so amusing as that of Mr. Arthur Wimperis (of course, no relation), but is probably more informative. The only aero engine illustrated is an ancient V-type Wolsley, which is claimed to run 6 lbs. to the h.p.; but apart from aero engines one may learn much really useful information which will help one to understand a petrol engine better.

ANOTHER WAR BOOK.

"Aeroplanes and Dirigibles of War," by Mr. Fredk. A. Talbot, is of some value as a contribution to the literature of aviation. It is well and clearly written, is free from journalese both in grammar and tone, and presents in popular terms a very fair representation of the doings and duties of aircraft in the present war.

Like most good things, the book has certain shortcomings, chief of which is the matter of the illustrations. These are admirably reproduced, but in several instances the effect has been marred by incorrect inscriptions. For example, illustrations of "A Zeppelin hand-grenade" obviously represent an anti-aircraft shell. An amusing photograph of a Blériot parasol monoplane with an officer in French uniform on board, which has come to ludicrous grief while "taxying," is described as "A British Aeroplane"; a B.E. biplane is referred to as a "seaplane," and a Zeppelin emerging from its shed is called a "Schutte-Lanz."

The author, evidently ignorant of the principles of kites, balloons, and of the inhumanity of spheres, is of the opinion that the Parseval-Siegsfeld type is inferior to the spherical captive balloon on account of its superior steadiness as a mark for enemy artillery. Experience has not shown this to be a serious drawback, apart from the fact that a wobbling sphere is as likely to dodge into a shrapnel burst as out of it. Some very interesting data are provided for "ranging" on captive balloons.

The statement that "the French airship fleet is inferior to the German in point of speed, if not numerically, but this deficiency is more than counterbalanced by the skill and ability of the men manning their craft, who certainly are superior to their contemporaries in Germany, combined with the proved character of such craft as are in service," seems open to contradiction on all points.

Mr. Talbot seems rather confused between the R.E. biplane and the B.E., which he speaks of as identical machines, and credits them with speeds of 40-50 miles an hour!

An interesting story, hitherto untold, is related of the French custom of taking "dud" aeroplanes up in airships above the clouds and launching them full of explosives upon the German lines. The narrative is distinctly amusing, but requires confirmation.

Taken on the whole, however, the book is one of the best of its kind yet produced, for it contains much really instructive matters, and is cheap at its price, 3s. 6d. Publishers: Wm. Heinemann, London.

A BOON TO BUSY PEOPLE.

One of the best of the small popular books on Aviation yet issued is "All About Flying," published recently by Methuen and Co., Ltd., of 36, Essex Street, London, W.C., at 1s. The book is written by Miss Gertrude Bacon, herself almost the first, if not the first, British woman to fly, and the daughter of the late Rev. J. N. Bacon, one of our most famous aeronauts.

The book makes no pretence at being a scientific work for those who already know a lot about flying, but is a simple exposition of why aeroplanes fly and what has been done with aeroplanes since flying first began. It is wonderfully clear and comprehensive and can be strongly recommended to those already concerned with aviation as a cheap and handy way of avoiding the trouble of explaining all about flying to their numerous friends who know nothing whatever about the subject and yet have been moved by the exploits of our Service aviators to want to know all about it.

Considering that the whole book only includes 115 small pages it is surprising how much Miss Bacon has got into it, touching as she does with considerable accuracy on such diverse phases of her huge subject as the work of the pioneers, why an aeroplane flies, flying machines of to-day, aero-engines generally, well-known personalities among aviators, how the pilot handles his machine, and the work which has actually been done in war. Miss Bacon's History of Aviation is crammed into twelve pages which include three pictures, and yet it manages to convey a real idea of what was done in the time.

On such purely technical points as dihedral angles, side ailerons, ailerons, gadget stabilisers, and so forth, Miss Bacon displays unusual technical knowledge, and with it the ability to explain these things so that they may be understood of the people.

The style of the book is distinctly good and is not without many humorous and neat little touches. There is even an index which will help the inquirer about aviation to find the explanation of sundry weird expressions and words used among aviators. One can honestly congratulate Miss Bacon on her work, and hope that it will save many of us from the trouble of giving long and tiring dissertations.

SAFETY HELMETS.

In these strenuous times it is the duty of every aviator to keep fit and well and to reduce the dangers of flying to the minimum. Many a slight mishap on the ground has resulted in concussion of the brain, which might have been avoided if a moderately thick skull had been protected by a scientifically built helmet. A certain prejudice still exists, apparently in flying circles against the wearing of a safety helmet, but men of experience know full well that, although it may be easier to wear a cloth cap hind-side before, there is considerable satisfaction in getting up after a fall and finding one's head still intact, even if more stars than usual are observed in the sky.

Almost the first and undoubtedly the best-known safety helmet in this country was invented by Mr. Warren, who has for so long been prominently associated with the Hendon Aerodrome. As a man of practical knowledge he was able to meet the requirements of the case in a very ingenious way.

The Improved WARREN

As supplied to the War Office and Admiralty.

Patentees and Makers—

TAUTZ & Co.,NAVAL, MILITARY & SPORTING TAILORS,
12, Grafton St., New Bond St., LONDON, W.**SAFETY HELMET**The best before, is now the last word
in Aviation Safety Helmets.**THE MOST IMPORTANT PART OF AN
AVIATOR'S EQUIPMENT****Don't wait until you have an accident.****Investigate its MERITS NOW**

His helmet was quickly adopted by many of the leading aviators, and has already been credited with enough life-saving to entitle Mr. Warren to the wearing of a large medal. Like everything else in aviation, it has improved in the course of time, experience having shown room for various new ideas. The present proprietor of the patent rights is Mr. C. H. Curtis, who is well known as proprietor of the old-established business of Messrs. Tautz and Co., of 12, Grafton Street, New Bond Street, W. A recent inspection of the latest model confirmed the belief that the Warren helmet is a necessary part of one's outfit, especially on active service, when forced landings might be expected at the expense of one's head.

The new model is neatly covered in a material which looks like leather, and wears like leather, but is not leather. It has the great advantage that oil and other stains can be cleaned off it, whereas with real leather this cannot be done.

The original helmets were made on a circular plan, but time showed that few aviators possessed a perfectly round head, even after taking their tickets, and it is now possible to purchase a helmet which is oval in form and so constructed that a comfortable fit is assured. The importance of this lies in the security against undue movement, which was formerly a danger when the headgear fitted at the front but not at the sides, and wind pressure might dislodge it. The padding has been deepened all round, and it is only by actually wearing one that the great amount of protection—for example, to the bridge of the nose—is fully realised. The position of the chin-strap has been altered with a view to comfort and security.

The essential part of the helmet is, of course, the series of tempered steel springs radiating from an aluminium plate which withstand the shock of a severe blow. The method of attaching these springs has now been much improved, and the whole thing is better than ever. Every aviator who has not already equipped himself should call on Mr. Curtis and inspect the latest type Warren safety helmet at once. The price is 55s. It is gratifying to hear that large Government contracts have been fulfilled since the beginning of the war.

A NEW MARKET FOR GOOD WOOD.

Much has been written in the Press respecting the engineering side of the aviation industry, and the evolution of the aerial motor, but one hears little of the equally important topic of timber. An engine is constructed of metals which are made to specifications—or should be, though sometimes a little doubt may be pardoned—and can be tested on the bench before the first demonstration is given in the air. Wood, however, requires very different handling. Only the eye of the expert can select the right kind of material fit to form the framework of an aeroplane, and it must be exactly right in quality, for upon its strength everything depends.

The timber industry is, of course, an enormous one, but comparatively few firms have as yet realised the possibilities of the new market opened up by the development of aircraft. Here and there someone, shrewd and far-seeing, has been struck with the almost unlimited field for enterprise thus presented, and has begun early to study the scientific requirements and commercial opportunities of the new industry.

The Engineering Timber Company, Ltd., of 9, Victoria Street, S.W., was formed comparatively recently, but in a very short time it became evident to those who came into contact with it that in Mr. J. E. Huson it had a managing director of unusual ability. Few business concerns have enjoyed so rapid a rise. The secret is to be found in the versatility of its moving spirit. Mr. Huson has had a remarkably wide education, literary, scientific, and commercial. His knowledge of the business world has been facilitated by his knowledge of half a dozen languages, and when he turned his attention some years ago to the timber trade in relation to aeroplane construction his acquaintance with botany was of no small service.

The result is that a huge business has rapidly been built up. No maker of aircraft need hesitate to place his requirements before the Engineering Timber Company, for it is most improbable that the necessary stock would not be immediately forthcoming. Difficult and experimental work appears to be Mr. Huson's delight, for he is one of those business men who like work for the problems it gives, apart from the profit.

Of the important contracts which have been entrusted to the firm since the outbreak of war much might be said, were it expedient. Of the arrangements which have been made for the future supply of those special kinds of timber on which our aircraft works will depend we must say nothing, beyond perhaps hinting at the fact that they are so comprehensive, and of so valuable a nature from the national standpoint, that they deserve to bring success to a company which has already established for itself a high reputation.—D. W. T.

MISCELLANEOUS ADVERTISEMENTS

All advertisements for this column should arrive at this office by 6 p.m. MONDAY to ensure insertion.

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For the convenience of Advertisers, replies can be received at the office of "THE AEROPLANE," 166, Piccadilly, W.

PATENTS.

"HOW TO TAKE OUT PATENTS IN ENGLAND AND ABROAD." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—ARTHUR EDWARDS & CO., LTD., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

PATENTS; trade marks; inventors' advised free.—King's Patent Agency, Ltd., 165, Queen Victoria Street, London. 28 years' references.

PATENTS.—Instructive leaflet free from STANLEY, POPPLEWELL & CO., Chartered Patent Agents, 38, Chancery Lane, W.C.

TUITION.

The London and Provincial School of Flying

NEXT VACANCY, JULY 21st

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ITALA CAR, 100 h.p., property of the late Mr. Gustav Hamel. New body, Rudge-Whitworth detachable rims, two spares, powerful electric lamps and dynamo, self-starter, etc. Cost £1,450; accept £500 or nearest offer.—Dawson Higgins, 101, Fulham Road, London.

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TO LET. Waterside premises at Cowes. Suitable for Seaplane work. 200 feet frontage to the River Medina, with large Joiners' Shop, Saw Mills, and wood-working machinery, Stores, etc.—Box No. 661, THE AEROPLANE, 166, Piccadilly, W.

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WANTED, good Engineer with first-class machine tool experience, to take charge of production of aeroplane engines. Man who has had experience in similar class of work and who can fill a sound and permanent position, is desired.—Apply, with full particulars of age, experience and salary desired, to Ruston, Proctor and Co., Ltd., Lincoln.

ENGINES WANTED.

WANTED, second-hand Aero Engine, about 50 h.p. Must be in perfect condition; also 8 or 9 ft. propeller.—R. W. Burney, 46, Avondale Road, Wigan.

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CHAUVIERE'S famous Integral Propellers hold all records; used by all leading aviators. The best.—Sole proprietors for Great Britain and Colonies, THE INTEGRAL PROPELLER CO., LTD., 18, Elthorne Road, Upper Holloway, N. Telephone: Hornsey 2345. Telegrams: "Avirop (Upholl), London."

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FOR EFFICIENCY, ACCURACY AND RELIABILITY.

THE WEEK-END AT HENDON.

The attendance at the London Aerodrome has been highly satisfactory recently. On Saturday the crowd included a large contingent of Boy Scouts, who displayed a keen interest in the flying, and were delighted at being taken close to some of the machines and having the principles of aeroplanes explained to them.

Messrs. Osipenko, Winter and Mantion made many flights on the usual G.-W. biplanes. Mr. Roche-Kelly gave exhibitions on a Beatty-Wright; Mr. Baumann brought out the 60-h.p. Ruffy-Baumann Caudron; and Mr. Moore spent a busy afternoon taking up many passengers on his Caudron-type L. and P.

Perhaps the most striking exhibition of the day, however, was provided by Mr. M. G. Smiles, of the London and Provincial School of Flying, on a Caudron-type biplane (35-h.p. Anzani), built by that progressive firm. He made a remarkably fine flight of nearly an hour's duration, reaching a height of 5,000 feet, though by no means a feather-weight pilot. This machine has a speed of 51 miles per hour, which is highly creditable to its makers, when one bears the small engine in mind.

Late in the evening Mr. Rowland Ding brought out the Mann biplane for a trial flight. This machine has now been fitted with a 135-h.p. Salmson engine, and has twin propellers. The design is highly experimental, and the flight was watched with the closest interest. The speed seemed good, but the climbing power modest. Various tests are being made in order to ascertain the most suitable form of propeller.

A very picturesque incident of the afternoon was the unheralded arrival of six Naval machines from a certain aerodrome "somewhere in England." As they came into view one was irresistibly reminded of the close finish of a cross-country race of the days before the war. One pilot, apparently anxious to get as near as possible to the Naval quarters, collided with the fence, the last revolution of his tractor-screw bringing it down in an extraordinary fashion on the public's side of the fence without doing any damage. After a short stay the half-dozen left again on their return journey.

On Sunday there was again a large attendance of visitors, many of them remaining to watch the school work, which kept a dozen machines busily occupied till it was dark. Saturday's pilots were all out again, with the addition of Mr. J. L. Hall and Mr. C. B. Prodder. Many passengers were taken up, and one young officer was so elated with his first flight that he rushed off to book a second, and was back again waiting his turn within five minutes.

An alarming accident occurred shortly after five o'clock. Mr. Ding, presumably anxious to provide "copy" for the first number of the new volume of THE AEROPLANE, brought the Mann biplane out for a further test. He had completed one circuit of the aerodrome in good style, his air-speed indicator showing 73 miles per hour, when, suddenly, there was a splintering crash, and fragments of wood and metal were seen to fly in all directions as though distributed by some internal explosion. What happened to Mr. Ding's heart at that moment is not known, but every other heart in the aerodrome stopped beating for quite an appreciable length of time. The machine swayed about in horrible fashion for a moment or two, turned round in a semi-circle, and then landed in astonishingly good style.

When the distant figure of the pilot was seen climbing out of the machine, evidently unhurt, there was an outburst of applause such as one seldom hears at Hendon nowadays. Apparently, one of the propellers had fouled a stay, and when one considers the possible consequences that might be expected, the resultant damages were surprisingly light. Mr. Ding received congratulations on all hands, both on his remarkable escape and on the brilliant manner in which he brought the machine safely to earth.

D. W. T.

PHOTOGRAPHS.

PILOT PORTRAITS



The F. N. B. Series of Copy-right Pilot Portraits includes all the most notable Pilots of the Flying World. Unmounted, post free, Sizes 12 by 10 in., 2s. 6d.; 8 by 6 in., 1s. 6d.; 6 by 4 in., 1s. 2d. Mention THE AEROPLANE and write for NEW LIST of 350 pilots. [The photographs in the "F. N. B." series can be obtained from F. N. Birkett direct at the above price.]

F. N. BIRKETT

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WE HAVE THE MEN OF THE MOMENT.

SITUATIONS VACANT.

FOREMAN required at once for Aeroplane Metal Parts Shop. One used to producing wing plates, frame joints, etc. Applications useless unless position of Foreman has been held before. No one on Government work need apply.—Write, or apply to nearest Board of Trade Labour Exchange, mentioning this paper and No. 663.

VACANCIES for Pupils, aged 15-18 preferably; workshop experience. (Making of a Working Model, 23 ft. of the "All British Resilient Airship," rigid construction). Small premium.—J. Wulffing, Aeronautical Engineer, 25, Hogarth Road, Earl's Court, S.W.

SHEET-METAL Foreman wanted immediately. One used to all classes of aeroplane tanks, silencer, panel and tube work. No one on Government work need apply.—Write, or apply, stating wages required and earliest date can start, to nearest Board of Trade Labour Exchange, mentioning this paper, and No. 662.

SITUATIONS WANTED.

WOODWORKING Shop Foreman, or Inspector, seeks re-engagement. First-class abilities.—Box No. 660, THE AEROPLANE, 166, Piccadilly, W.

EXPERIENCED and Successful Designer of Monoplanes and Biplanes, ex-Student of Ecole Supérieure Aeronautique, Paris, who has held good situations in French and English aviation firms, good mathematician, seeks situation.—E. R., 7, Elm Dale Road, Clifton.

MISCELLANEOUS.

AERONAUTICAL ENGINEERING.—Correspondence tuition in sections or complete course, 12 lessons.—British School of Engineering, 36, Maiden Lane, W.C.

HARDWOOD for Aeroplanes. Specially selected, air-dried timber as supplied to leading constructors in Britain and the Continent. Silver Spruce, Ash, Poplar; Hickory and Ash Skids; Threeply; Thin Cedar and Mahogany for Floats; Walnut for Propellers.—William Mallinson and Sons, Ltd., Hackney Road. 'Phone, 3854 Central, 4770 Wall.

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FURNISHED House near Hendon Aerodrome, 5 gns. week.—H., THE AEROPLANE, 166, Piccadilly, W.

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MODELS.

M.S.C. set of parts with drawings for constructing monoplane 30 in. by 24 in.; price 2s. 6d.; postage 3d. M.S.C. Compressed-air engine, weight 2 oz.; price 7s. 6d. Air container, size 24 in. by 3 in. diam., weight 7 oz.; price 7s. 6d.—Murray, Son & Co., 387A, High Road, High Cross, Tottenham, N.

School and Weather Reports to July 4th, 1915.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast ...	Rainy	Dull Show'y	Rainy	Rainy a.m. Fine p.m.	Fine	Fine	Fine
East Coast ...	Dull	Fine a.m. Show'y	Fine but Dull	Fine	Fine	Fine	Fine
Hendon ...	Fair	Wet, p.m. Fair	Fair	Fair	Foggy	Fair	Fair

HENDON

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Procter and P. A. Johnston.

Pupils with instructor on machine: Messrs. Bond (25 mins.), Boyle (28), Bush (10), Chalmers (85), Crossman (9), Delves (36), Eaton (55), FitzHerbert (5), Fox (22), Holland (70), Jones (36), Litton (5), Ross (60), Rutherford (9), Sampson (20), Theo (20), Tomlinson (25), Vickers (15), Zimmermann (39), Savill-Onley (21), Dickinson (60), Turner (30).

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes; Caudron tractor biplanes.

Mr. Blandy continued extra practice on a Caudron machine. Exhibition flights were given on Thursday, Saturday and Sunday, and five passenger flights were taken.

AT THE HALL FLYING SCHOOL.

The Hall Flying School has another excellent week's work to report. The following pupils are especially showing progress: Lieut. Raymond-Barker, Lieut. Grant, Messrs. Minot, Furlong, Gay and Gordon should all be qualifying for their certificates in a few days.

Mr. C. W. Snook, who came from Australia to join the School, took an excellent certificate on Thursday evening, landing with precision on the mark each time.

The other pupils at the Hall Flying School are progressing well. With Instructor H. F. Stevens: Doing circes. and figs. of 8: Messrs Snook (36), Furlong (34) and Minot (38).

With Instructors C. M. Hill and H. H. James: Lieut. Grant (55), Mr. Booker (63), Lieut. Phillpotts (49), Mr. Snowdon (67), Lieut. Raymond-Barker (74), Messrs. Yonge (32), Bell (37), Gay (38), Gordon (45), Hatchman (38), Lieut. Jowett (39), Mr. Russell (16), Mr. Hammer (26), Mitchell (14), Cownie (16), Bayley (16), Millbourne (28), Punnett (8), Wenner (18), Bangs (16) and Wilkins (10).

Machines in use: Hall tractor biplanes. Instructors: Messrs. J. L. Hall, H. F. Stevens, C. M. Hill and H. H. James.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instructor on machine: Prob. Flt. Sub-Lieuts.

Hodge, Hume, Dallas, James, Clayton, Clifford, Douglas, Murray, Penley, Perham, Roach-Pearson, Sievking and Watkins.

Strts. and rolling alone: Prob. Flt. Sub-Lieut. Pearson. Practice on bi-rudder machine: Prob. Flt. Sub-Lieuts. De Roeper, Hardman and Watkins.

Eights or circes. alone: Prob. Flt. Sub-Lieuts. Hood, De Roeper, Hardman and Watkins.

Certificates taken by Prob. Flt. Sub-Lts. Hood and De Roeper.

Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Pupils with instructor on machine: Messrs. Dyson-Perrins (34 mins), Wilson (10), Hudson (7), Gardner (20), Wallis (6), Mathewson (18), Ball (12).

Strts. or rolling alone: Messrs. Sykes (30), England-Derwin (32), Fenning (23), Wilson (8), May (20), Gardner (6), Wallis (6). Eights or circuits alone: Messrs. Cole (25), and Balfour (50).

Mr. T. Cole passed for his brevet in good style, and Lieut. Balfour (who has been at the school for nine days), gave one of the best brevet performances seen for some time.

Machines in use: Ruffy-Baumann (60 h.p.), Ruffy-Baumann (50), Caudron type biplanes.

Many passengers were taken on the 60 h.p. R.-B. biplane, which still shows a remarkable capacity for lifting. Lieut. Balfour is returning to the front and will join the R.F.C.

AT THE LONDON AND PROVINCIAL CO.'S SCHOOL.

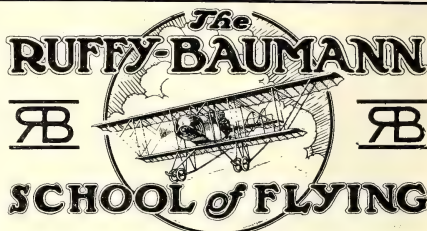
Instructors for the week: Messrs. W. D. Smiles, M. G. Smiles, W. T. Warren and James.

Pupils doing straights: Messrs. Dower, Minter, Pullinger, Adams, Scott, Jacques and Wattine. Rolling: Messrs. Sykes, Gunner and McOnie.

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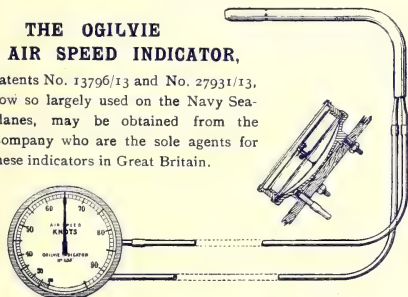
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"Soaring" Bognor

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THE AEROPLANE

WEDNESDAY, JULY 14, 1915

Edited by
C. G. Grey

Vol. IX. No. 2

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

OUR OBJECTIVE



A Suburb of Berlin, photographed from P. VI (Parseval passenger Airship), the shadow of which is seen on the forest in the foreground. It is hoped that the shadow of a British Aeroplane may soon fall there.

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On Getting Things Done.

It used to be thought that Spain was the land of to-morrow, where everything is going to be done *mañana*, but it was an Englishman who invented the motto: "Never put off till to-morrow what will do just as well the day after." The whole of this condemned nation seems to be running itself on the idea that the day after to-morrow will do just as well for getting anything done.

It is not the Government who are to blame, it is not the Heads of the Services, it is not the Business Men, it is not even the Working Classes. It is the whole British Nation who will not get up and get things done. Every class is equally to blame. We are simply a nation of shopkeepers who have grown too fat on easily acquired business in the past, acquired by selling stuff to nations at war, as America is doing to-day, and now we have not the energy to start on new lines.

The whole situation is summed up to perfection in Mr. Bert Thomas' brilliant cartoon in "London Opinion" of July 3rd—by far the best cartoon the war has produced—which shows an irate officer banging his fist on a counter and demanding "Munitions, please, as quick as possible!" from John Bull, who stands behind the counter in the typical attitude of the stupid British shopkeeper and says "Munitions? Oh, I suppose you want them for the war? Well, we've not noticed much demand for them, but we'll have some made for you. You've got nice weather for your fighting just now!"

There you have the whole attitude of the people of this country, from the pettifogging lawyers who run the Government to the people who are paid for sweeping the streets and don't—with the exception of a few people possessing ordinary common sense, who can see that if there is not something very like an earthquake in official circles, Service as well as Civilian, before long, this country will be a very unpleasant habitation.

I do not mean that the Germans are going to land in England and treat it as they treated Belgium. The Fleet can stop that, for the Fleet is big enough to beat the German Fleet, simply by sheer weight of metal, just as the German attack at the beginning of the war beat our little Expeditionary Force. Probably the officers and men of the Navy are the only people who will agree with me when I say that if the German Navy were as big as our own it would be a toss-up as to which would win, German efficiency or British skill. Every other Englishman doubtless thinks that British pluck alone would win, even against heavy odds. Read then the late Admiral Count von Spee's modest and chivalrous story of the sinking of the "Good Hope" and "Monmouth." The way he and his men went out shows that the British Navy has no monopoly of pluck.

What I do mean is that unless we get things done this country and France will be forced into a humiliating peace, which will allow Germany to hold her frontiers

with a moderate army, while she applies to her navy the same thoroughness and practical science which has made her army the terrific fighting machine it is. Which means that for the next ten or fifteen years this country will be groaning under a burden of Naval armament compared with which our past burdens will be as Solomon's whips to his successor's scorpions. And all because we cannot get things done now for lack of a few strong men, and of a few clever organisers whom we can easily afford to pay well enough to make it worth their while to be honest.

And this because people in authority squabble among themselves, issue their little manifestos, expose one another's petty weaknesses, stand on their silly dignities, go off in foolish huffs, and generally comport themselves like a pack of women in a suburban "society" clique, while all the time any one of them is not worth the life of the most junior Service pilot who is killed through flying an old and worn-out machine for lack of the new one whose delivery is delayed by silly-shallying.

THE TAXATION OF WAR PROFITS.

The other day I was talking to a maker of aeroplanes who needed some additional capital with which to extend his works. He was going to get things done in earnest. Then the promised capital took fright because of the threatened taxation of war profits. Consequently one of the Services will have to wait a bit longer for some particular machines which it wants very badly.

As to taxing war profits. Why cannot the question be settled promptly on a basis of capital involved and dividends paid since that capital was invested? No one would call an average of ten per cent. unreasonable, and if the Government took half of everything above that amount presumably no one would grumble much.

Some firms have never yet paid a dividend, and such firms should be allowed to pay their ten per cent. on all the previous years in which shareholders or individual proprietors have got nothing, before the Government begins to share profits.

A trifle more difficult is the case of the firm or individual who has devoted the best years of his life to aviation, and who has only procured the support of capital since the Navy and Army began to take flying seriously two or three years ago. Take the cases of people like Mrs. Hewlett, Mr. A. V. Roe, Mr. Sopwith, Mr. Fowler, Mr. Ridley Prentice, and Mr. Grahame-White, who risked their own lives on experimental machines to begin with, and then risked all the money they possessed themselves and all they could rake together from relatives or friends. Are they to be taxed out of all their profits made during the war, and to receive no allowance for the personal risks of previous years during which they have also lost money steadily?

Then take the cases of another group, firms like those founded or financed by the Short Brothers, Mr. Robert Blackburn, Sir George White, Mr. Holt Thomas, Mr. and Mrs. Voight, Messrs. Martin and Handasyde, Sir William Ramsay, Mr. Handley Page, Mr. Lang, Mr. Clarke, Messrs. White and Thompson, all of whom risked their personal fortunes and spent money for years without seeing any prospect of return, merely backing their faith in the future of aviation. Are they to be taxed out of all their present profits, or are they to be allowed to spread them over their lean years?

One might well include in this category firms like Vickers Ltd., Beardmore's, Armstrong-Whitworth's, J. Samuel White and Co., the Coventry Ordnance Works, and perhaps others, who must have made heavy losses in the early days of the aviation departments which they started chiefly to oblige certain Government Departments.

So far as the pilot-constructors are concerned, who worked in their early flying years on no capital at all, or very little, it should be quite simple to take their capital value, as represented by the salary they are now drawing, and let that represent the capital on which they started, so that they may be allowed to draw retrospective dividends before beginning to share up with the Government, these retrospective payments being subject, of course, to income tax in the ordinary way.

It seems quite simple to settle the matter on some such basis as this, and it has only taken me as long to think it out as it has taken to write it. Heaven forbid that I should ever pose as a financier, but if I can get so far in half an hour, surely a trained financier could get the whole thing fixed up in a week. But no! That would be getting things done, which is contrary to the true spirit of democratic government, which merely talks.

It should be evident that, but for the foresight of these individuals and their firms, the supply of aeroplanes would by now be only a minute fraction of what it is, and that therefore they deserve something even greater than their mere legal reward, for it is thanks to them that the R.N.A.S. and R.F.C. are able to get things done at all.

"CHANGE AND DELAY IN ALL AROUND I SEE."

There is another place where that strong man, if he ever manifests himself, can put his foot down hard with advantage. That is in the matter of juggling with aeroplane designs after they have once been passed by practical men as fit for service. I have on various occasions related how deliveries of B.E.2c's have been held up for months by alteration after alteration in detail designs which do not increase the safety or efficiency of the machine in the least, and appear to have been altered merely to give some brain-wave specialist a chance of showing off his misguided ingenuity or of scoring off some rival, possibly in his own office.

The same thing occurs to a less extent in the Navy, and even in civilian firms, and is complicated by the fact that individual pilots are allowed to have a finger in the pie also. Machines are altered from stick-control to wheel-control, someone does not like the look of a chassis strut, someone else wants an extra wire somewhere, experimental freak machines are built to please some other person, yet another wants a bigger fin, and so on, till works which ought to be turning out a regular output per week have their erecting shops bunged up with complete machines for a week or two waiting for some little fiddling alteration to be made, which could easily be done in a Service shed by Service mechanics,

and the erection of the next series of machines is thrown back for a corresponding period, and so things do not get done.

And set against that the fact that machines like the Avro two-seater, Sopwith tabloid, Martinsyde scout, Bristol scout, Vickers gun-carrier, and Short seaplanes were practically built without drawings or formulæ and were flying before their own drawing offices had caught them up. So much for "science," which has never approached their performances.

MESS AND MEDDLE.

One result is that instead of British factories turning out a steady regular stream of machines they come out in jerky dribblets like oil from a defective lubrication pump, and for the same reason that the pumping force is not behind them.

It even affects the output of the individual workman, for how can a man be enthusiastic over his work when he sees a big job in which he has taken a proper craftsman's pride for a month or so scrapped because some slide-rule theorist has suddenly had a brain-wave and has thought of what he thinks is a better way of doing it, although the other is quite practical.

What would the Fleet be like, or what would our Field Artillery be like, if stipendiary geniuses from either side of Whitehall, or Gunnery Lieutenants or Gunner officers, were allowed to play about with the fundamental designs of destroyers, or submarines, or guns while they were all but finished? The thing is unthinkable, so why is it allowed in the newer Services or Corps?

FOREIGN SUPPLIES.

It follows that in the absence of British machines and engines we have to take what we can get elsewhere. Which is why one sees British Service aviators disporting themselves on machines which have been condemned by the French as unsuitable for military purposes, though in some cases good enough as mere flying machines. Some such machines have cost us the lives of pilots, others have merely cost us money, but it all comes back to the fact that we need someone with the power to get things done.

In the "Morning Post" Mr. Massac Buist, in one of his periodical really good articles, draws attention to the fact that "the Allies" are buying aeroplanes in America. Germany, of course, knows exactly how many we have ordered and how many are delivered each week, but in this country it is naturally "verboden" to mention numbers. Incidentally the "verboden" idea is about the only touch of German thoroughness which we have borrowed, and then as usual we have applied it in the wrong way, like the chemist who administered a slight dose of an emetic to stop a cough, on the grounds that "in about five minutes the patient would be jolly well afraid to cough."

Mr. Buist points out that one firm in the States which before the war sold a limited output at £760 a machine now receives an advance of practically £1,000 per machine "contracted for by the Allies," and an additional £560 on delivery, whereas the British manufacturer has to wait for months for payment after delivery of the goods.

Well! Good luck to the American manufacturer who has succeeded in getting things done to his own advantage. It only shows what can be done if one goes the right way to work. I am strongly under the impression that some British firms are also getting substantial advances, especially those who take on building freaks to the fancy of Government designers, but it ought to be made a practice whenever it is evident that an advance will hurry things up.

As Mr. Buist points out, the British manufacturer has

to borrow from his banker to keep going. It would be much better for the Government to lend the money and deduct the interest itself, but that would be interfering with vested interests, and besides getting things done it would prevent the British taxpayer from being done—in another way.

GRAFT.

Talking of the British taxpayer being done—when this war is over, if we still remain a Nation worth calling a nation, there will be financial graft exposed alongside which the Marconi Scandal will seem a mere flea-bite in quantity if not in quality, for nothing could be much dirtier in quality, and human lives were playthings in that case too. What think you of firms wishing to sell munitions, and being practically told that the best way to accelerate orders, or even to get them at all, is by obtaining an advance of capital from certain bankers, despite the fact that the firms have plenty of capital for wages and for the necessary bonds guaranteeing execution of orders? Or of middlemen firms who are merely business people, and never see or touch the goods, which can place orders at will with firms which have been refused orders direct?

It reminds me, only on a bigger scale, of a friend of mine, an Army vet., who was sent abroad to pass remnants during the South African War. On a certain foreign coast he was offered £5 for each horse if he would pass the mobs belonging to a certain dealer as they stood at each port. He refused point blank, but the mobs were quite good and he passed about 75 per cent. of some 15,000 horses, and drew his Army pay, and not a cent more. As he worked farther down the coast there followed him a ship belonging to a syndicate of influential English "sportsmen," which took on board his 25 per cent. of rejects and sold the whole crowd on the dock at Cape Town, so that the British Army got all the horses at the finish and he did himself out of £75,000 by being honest. I could never get him to believe afterwards that honesty was the best policy.

Still, after all, scandalous finance does no more real harm than wilful foolishness or mere congenial idiocy, though perhaps it riles one a trifle more.

People in factories are just as inept at getting things done. Here is an extract from a letter from one of the "toads beneath the harrow" in a big workshop:—

REX v. AN AVIATION COMPANY.

Mr. Justice Avory gave judgment on July 7th in a case in which an aviation company petitioned the King to obtain compensation for property which had been requisitioned for military purposes.

Reports of the hearing of the petition were forbidden, but his lordship announced that there would be no objection to the publication of the decision.

The suppliants' aerodrome was taken by the Crown, and Mr. Justice Avory now said that he had come to the conclusion that the King, by virtue of his war prerogative, was entitled in the circumstances to take possession of the land. In addition to that, the regulations under the Defence of the Realm Act conferred on the competent naval and military authorities during the continuance of the war an absolute and unconditional power to take possession of land and buildings, and to do any other act for the public safety and the security of the realm, even though that act interfered with private rights to property.

The suppliants had failed to establish any right in law to compensation. There must be judgment for the Crown. His Lordship thought, however, that the suppliants were entitled, under the Royal Commission of Inquiry of March 31st, to apply for compensation for loss or damage suffered through interference with their property.

[An amusing point is that the name of the aerodrome in this case is suppressed although it is mentioned constantly in the officially issued lists of pilots.—Ed.]

"There is need for a right man in the right place to get a hustle on and speed things up with the oil of method and efficiency. I know for a fact that certain bolts which are wanted by a certain firm have been on order for six months. I can understand things being held up for a week or so, but not six months. Why is it? It is this way. The manager sits in his office with a cigarette in one hand and the telephone in the other. There is too much of this telephone business, instead of going to a firm and getting what is wanted and taking it away, or seeing that it is put on delivery.

"As I was going through W—to-day I saw an empty picture palace. It is not being used; there are only a few windows broken. It is small, it is true, but it could be used for making sockets and similar fittings. There are one or two small outside places where a couple of welders could work, leaving the main hall for fitters, etc. The G. C. Rly. is only five minutes away, so transport is easy. It might be more useful than it is, and incidentally help the country and the landlord."

Precisely. The manager will not go and get things done, and he is so afraid of being supplanted by a more live man that he will take excellent care that no one else goes and gets things done. Otherwise empty picture palaces all over the country would be buzzing with work.

It is the same all through the community, down to the corporation dustmen. There are so many grossly incompetent people who have been pitchforked into high positions or well-paid position.—each according to his kind—that they would rather get nothing done and simply sit still holding down their jobs than make a move in any direction for fear of a better man exposing their incompetence and getting their places.

When one adds to this paltry schemers stealing the ideas of good men and foisting them off as their own, when their own incompetence is bound to make the better man's idea a failure; and when one adds those who merely "crab" good ideas to show their superiority to those who suggest them, one begins to see more and more the country's need of a Dictator, a strong man, not an Irish politician or a Welsh revivalist or a Scotch lawyer, but a leader of men with the mind of a Scottish engineer and a genius for plain common sense. But can anyone find him?—C. G. G.

THE ACCELERATION OF AIRCRAFT PRODUCTION.

The Blackburn Aeroplane and Motor Co., Ltd., Leeds, are now in an admirable position to supply and give good delivery of stampings, pressings, drop forgings, strainers, tanks, cowls, etc., for B.E.2c. aeroplanes. Their works at Leeds have been extensively enlarged and equipped with machinery for the rapid production of these parts, with the result that the accuracy and quality of the parts are able to pass any test required by the Government.

Probably no firm in the country has responded more rapidly to the requirements of the Government for aeroplanes and aeroplane parts than the Blackburn Aeroplane and Motor Co., Ltd.

CONGRATULATIONS.

A marriage has been arranged, and will shortly take place, between John Herbert Spottiswoode, of Spottiswoode, Lauder, Berwickshire, son of Captain Herbert, of Muckcross House, Killyearney, and Hylda Marjorie, youngest daughter of Colonel Arthur Venables Kyrke, of Staple-grove, Somerset.

Mr. Spottiswoode, who has long been keenly interested in aviation, and was concerned in the Scottish Aviation Co., owners of the Avis monoplanes, in 1909-10, recently returned from Germany, where he was interned at the beginning of the war. He was allowed to depart as unfit for military service.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," July 6th, 1915.

WAR OFFICE, JULY 6TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Squad. Comr.—Capt. E. R. Ludlow-Hewitt, R. Irish Rifles, from a Flight Comr., and to be tempy. Major whilst so employed (June 24th).

Flying Officer.—Capt. B. Blood, 4th Hussars, and to be seconded (June 10th).

To the Reserve.—Capt. C. A. G. L. H. Farie, High. L.I., from a Flight Comr. (June 6th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on probn.) are confirmed in their rank:—A. M. Morison, G. L. P. Henderson, H. L. Cooper.

To be Sec. Lieuts. (on probn.):—C. T. Cleaver (June 21st); F. A. G. Noel (July 1st); F. Tedman (July 5th).

* * *

From the "London Gazette," July 7th, 1915.

WAR OFFICE, JULY 7TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—W. G. B. Williams to be Sec. Lieut. (on probn.) (June 12th).

* * *

From the "London Gazette," July 8th, 1915.

WAR OFFICE, JULY 8TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Commanders.—Lieut. G. L. Cruikshank, Gord. Highrs., and to be tempy. Capt. while so employed (June 21st); Lieut. A. A. B. Thomson, Spec. Res., and to be tempy. Capt. while so employed; Maj. F. W. Richey, R.A. (June 21st).

Flying Officers.—Sec. Lieut. H. L. Cooper, Spec. Res., Tempy. Sec. Lieut. D. D. Drury, Tempy. Sec. Lieut. A. V. Hobbs, 10th R. Suss. R., and to be transferred to Gen. List, Tempy. Lieut. W. Joyce, 8th Bedf. R., and to be transferred to Gen. List (May 26th); Tempy. Sec. Lieut. I. W. Aitken, 13th Regt. of Cavy. (June 17th).

Asst. Equipment Officers.—Qrmr. and Hon. Lieut. E. J. Parker, R.F.C., Qrmr. and Hon. Lieut. S. J. Payne, R.F.C. (June 1st).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—A. P. Thurston to Sec. Lieut. (June 24th); L. E. Brown-Greaves to be Sec. Lieut. (on probn.) (June 14th).

* * *

From the "London Gazette," July 10th, 1915.

WAR OFFICE, JULY 10TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on probn.) H. Le Jeune is confirmed in his rank, and to be Lieut. (April 15th).

* * *

From the "London Gazette," July 11th, 1915.

The following passages in Sir John French's dispatch issued on July 11th deal with the work of the R.F.C.:—

With the assistance of the Royal Flying Corps the 31st Heavy Battery scored a direct hit on a German gun, and the North Midland Heavy Battery got on to some German howitzers with great success.—(Dated May 10th.)

The work performed by the Royal Flying Corps has been invaluable. Apart from the hostile aeroplanes actually destroyed, our airmen have prevented a great deal of aerial reconnaissance by the enemy, and have registered a large number of targets with our artillery.

I have once more to call your Lordship's attention to the part taken by the Royal Flying Corps in the general progress of the campaign, and I wish particularly to mention the invaluable assistance they rendered in the operations described in this report, under the able direction of Major-General Sir David Henderson.

The Royal Flying Corps is becoming more and more an indispensable factor in combined operations. In co-operation with the artillery, in particular, there has been continuous improvement both in the methods and in the technical material employed. The ingenuity and technical skill displayed by the officers of the Royal Flying Corps in effecting this improvement, have been most marked.

Since my last dispatch there has been a considerable increase both in the number and in the activity of German aeroplanes in our front. During this period there have been more than sixty combats in the air, in which not one British aeroplane has been lost. As these fights take place almost invariably over or behind the German lines, only one hostile aeroplane has been brought down in our territory. Five more, however, have been definitely wrecked behind their own lines, and many have been chased down and forced to land in most unsuitable ground.

In spite of the opposition of hostile aircraft, and the great number of anti-aircraft guns employed by the enemy, air reconnaissance has been carried out with regularity and accuracy.

I desire to bring to your Lordship's notice the assistance given by the French Military Authorities, and in particular by General Hirschauer, Director of the French Aviation Service, and his assistants, Colonel Bottieaux and Colonel Stammler, in the supply of aeronautical material, without which the efficiency of the Royal Flying Corps would have been seriously impaired.

[It is well to note that this dispatch only covers the period up to May 25th, and that very marked changes in the aerial situation have since taken place.—Ed.]

* * *

From the "London Gazette," July 12th, 1915.

WAR OFFICE, JUNE 20TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Asst. Eqmpt. Officer: Lieut. H. Le Jeune, S.R., April 15th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on probn.): J. G. Western, July 8th; H. A. Cooper, July 13th.

NAVAL.

The following appointments were notified at the Admiralty on July 6th:—

ROYAL NAVAL AIR SERVICE.—Warrant Officer, sec. grade, temp., G. Sykes, and Mr. P. G. Browne granted temp. commissions as lieuts., R.N.V.R., with seniority July 3rd and July 5th respectively.

Mr. W. D. Smiles granted a temp. commission as sub-lieut., R.N.V.R., with seniority July 5th.

The undermentioned have been entered as proby. flight sub-lieuts. for temp. service, to date as mentioned: A. C. B. Geddes, June 30th; A. Gammon and W. A. Davies, July 11th; R. W. A. Adkins, July 2nd.

* * *

The following appointments were notified at the Admiralty on July 8th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieuts.—F. W. Belt, A. L. Rogers, and G. Errington promoted temp. lieut.-coms., with seniority, July 7th.

Temp. Sub-Lieuts.—The Hon. J. R. B. Balfour, H. D. Seale, F. W. M. Moore, A. H. Ruston, and C. N. R. Wright promoted temp. lieuts., with seniority July 7th.

The following have been granted temp. commissions as lieuts., R. N. V. R., to date as mentioned: G. W. de Chair, July 6th; C. C. L. Ionides, and A. G. Ionides, July 7th.

Chief Petty Officers—J. McG. Robertson, H. W. Blake, C. Wilkinson, H. G. Sabiston, S. F. B. Smith, and J. J. Barnard granted temp. coms. as sub-lieuts., R.N.V.R., all to date July 7th.

* * *

The following appointments were notified at the Admiralty on July 12th:—

ROYAL NAVAL AIR SERVICE.—Messrs. W. J. S. Lockyer and J. H. Spottiswoode granted temp. commissions as lieuts. R.N.V.R., to date July 10th.

Mr. S. T. Panther granted a temp. commission as sub-lieut. R.N.V.R., to date July 10th.

Temp. Lieut. M. Birkbeck, R.N.V.R., and Mr. G. Smethurst, entered as proby. flight sub-lieuts. for temp. service, to date July 9th and July 18th respectively.

* * *

The Secretary of the Admiralty makes the following announcement which relates largely to the work of aircraft:—

It will be remembered that since the end of October last the "Königsberg" has been sheltering some distance up the Rufgi River (German East Africa) in a position which rendered attack most difficult, only shallow-draught ships being able to get sufficiently close to her to be able to engage effectively. Two months ago the Admiralty decided to send two river monitors, namely, "Severn," Captain Eric Fullerton, R.N., and "Mersey," Commander Robert A. Wilson, R.N., to assist the Commander-in-Chief of the Cape Station, Vice-Admiral H. King Hall, C.V.O., C.B., D.S.O., in these operations. The position of the "Königsberg" was accurately located by aircraft, and as soon as the monitors were ready the operations were begun.

On the morning of July 4th the monitors entered the river and opened fire, to which the "Königsberg" replied immediately, firing salvos of five guns with accuracy and rapidity. H.M.S. "Mersey" was hit twice, four men being killed and four wounded by one shell.

As the "Königsberg" was surrounded by jungle, the aeroplanes experienced very great difficulty in

"spotting" the fall of the shot. She was hit five times early in the action; but after the monitors had fired for six hours, the aeroplanes reported that the "Königsberg's" masts were still standing. A salvo then burst on her, and she became heavily on fire between the masts.

She continued to fire with one gun intermittently for a while; but for the last part of the engagement she did not fire at all, either on account of lack of ammunition or disablement of her guns. Although not totally destroyed as a result of this engagement, she was probably incapacitated.

In order to complete the destruction of the "Königsberg," the Commander-in-Chief ordered a further attack on July 11th, and a telegram has now been received from him stating that the ship is a total wreck. In this last engagement our casualties were only two wounded in his Majesty's ship "Mersey."

[The "Königsberg" was a protected cruiser of 3,348 tons.

The names of the aviators concerned are, so far, not made known, but one gathers that Major Gordon, R.M.L.I., who has done so much good work without publicity along the Scottish coast, is the senior R.N.A.S. officer on the spot.—Ed.]

* * *

The Secretary of the Admiralty announced the following casualty on July 6th:—

MEDITERRANEAN EXPEDITION.
SLIGHTLY WOUNDED.

Under date June 4th:—

Lieut.-Com. Charles Lister, R.N.V.R. Armoured Cars.

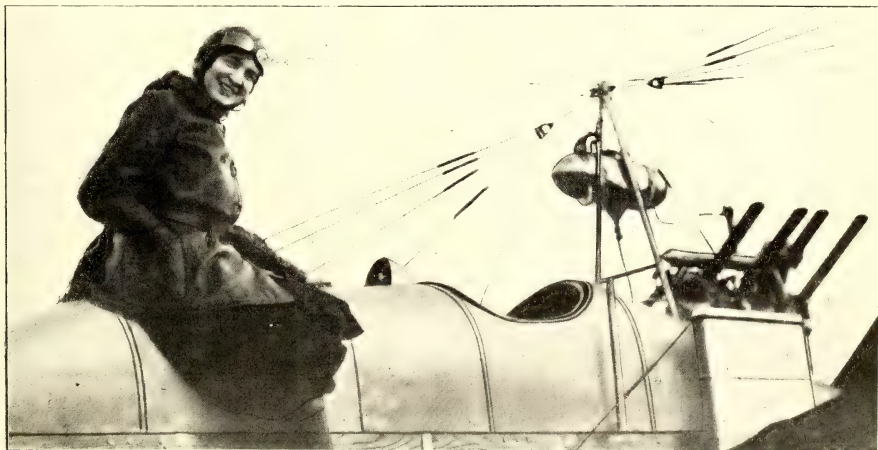
* * *

By an Order approved by the King in Council on July 6th, on the application of the Lords Commissioners of the Admiralty, the rating of boy mechanic has been established in the Royal Naval Air Service, with pay at the rate of one shilling a day.

[One has heard nothing yet of the ingenious idea of entering female typists as "Air Mechanic (F.*)" to get over the difficulty of there being no official rating for these young ladies.—Ed.]

MILITARY.

The Casualty List issued on July 8th contains the following under date July 2nd:—



ONE OF OUR ALLIES.—Mdlle. Golanchikova, who took her certificate at Johannisthal in 1911, and who holds the height record for women-pilots with a height of 3,500 metres (11,400 feet).

WOUNDED.

Stott, Capt. J. N. S., 5th Dragoon Guards, att'd. Royal Flying Corps.

* * *

The Casualty List issued on July 12th contains the following:—

OFFICIALLY REPORTED MISSING, AND UNOFFICIALLY REPORTED INTERNED IN HOLLAND.

Adams, Sec. Lieut. F. P., Royal Flying Corps.

Meakin, Sec. Lieut. G. E. R., Royal Flying Corps.

* * *

The following passage in the descriptive account issued on July 7th communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on July 2nd, deals with aircraft:—

July 3rd.

On Thursday, July 1st . . . notwithstanding the unfavourable weather, aerial reconnaissance was carried on by both sides, and a hostile machine was brought down by our guns and fell somewhere within its own lines. On Friday, the 2nd, artillery action was the only feature, the German gunners being especially active against the right and left sectors of our front.

* * *

The following passages in the descriptive account communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on July 7th, refer to aircraft:—

July 9th.

On Sunday (July 4th). . . . The German aircraft also were busier than they had been for some days.

On Tuesday. . . . The only points worthy of remark about the events along the remainder of our line were considerable hostile shelling in the neighbourhood of Festubert, where a German aeroplane dropped some bombs.

On Tuesday afternoon the Prime Minister and Lord Kitchener paid a visit to General Headquarters, staying till Thursday evening. . . . Mr. Asquith and the Secretary of State for War started out early on Wednesday for an extended tour of the northern half of the British front and area. It was a disagreeable day for sight-seeing, as a high wind was blowing and clouds of dust hid the roads and rose from every patch of bare ground; but in another way the weather was suitable, since its squally nature rendered the presence overhead of spying aeroplanes very unlikely.

The cunning of the Germans is by now fully realised. That it is only too often mixed with treachery is equally well established; but cases have recently occurred of the performance of a clever trick which is unmarred by any suspicion of foul play, and is worthy of admiration on account of its ingenuity.

It is the custom on occasion, for certain reasons, for the officers of the Royal Flying Corps on aerial reconnaissance or observation duty to send back messages by means of light signals. This practice is not viewed with favour by the Germans—probably because its results have been more than annoying; and they have evolved the following method for putting a stop to it, exploiting the fact that it is sometimes very difficult for those below to recognise whether an aeroplane at a high altitude is friend or foe.

If they see a British machine hovering overhead and using these daylight flares some of their guns at once open fire on areas or targets in our lines which have already been carefully registered.

The object of this procedure is by the sequence of the fire of their guns after the exhibition of lights from our aeroplane to make those in charge of our anti-aircraft armament imagine that the aeroplane they see is a hostile machine observing for the German artillery and to shell it.

Well thought out as is the ruse, it has only to be seen through one to be rendered innocuous for the future, but the underlying intention of employing our guns to destroy our aeroplanes is distinctly meritorious.

[If anyone but a soldier had expressed such opinions he would be denounced as a pro-German by unthinking civilians who cannot understand how it is possible to judge an enemy from a purely professional point of view.—Ed.]

* * *

The "Court Circular" states that at Buckingham Palace on July 12th, the King held an Investiture at 11.30 o'clock in the morning.

Among those who were severally introduced into the presence of the Sovereign when the King invested them with the Insignia of the respective Divisions of the Orders into which they have been admitted was Captain Thomas Cartnew, Royal Flying Corps, who was invested with the Distinguished Service Order.

* * *

An inquest was held by Mr. Sylvester, Coroner for Central Wiltshire, at Netheravon Military Hospital, on July 9th, on the body of Captain Arthur Henry Leslie Soames, 3rd Hussars and Royal Flying Corps. On Wednesday, Captain Soames, who was in charge of the experiments at the Central Flying School at Upavon, was experimenting with a bomb. It was placed on its nose in a wood near Netheravon Hospital, and was fired by an electric wire, 100 yards long, which was carried through a thick clump of trees. After the bomb had been fired Captain Soames was found on the ground severely injured. A tree near him had been cut through by part of the exploded bomb. The officer's injuries were very severe, but he was still conscious. He died the same night.

Evidence was given by Major Pitcher, Central Indian Horse, who said that another officer, Major Boase, was also knocked over and too badly shaken to attend the inquest. The bomb was of a new type and was tested under these conditions for the first time, but 100 yards distance was considered sufficient.

A. H. L. Soames was born at Wrexham on May 20th, 1887. He took his certificate, No. 369, on a Vickers monoplane at Brooklands on November 26th, 1912.

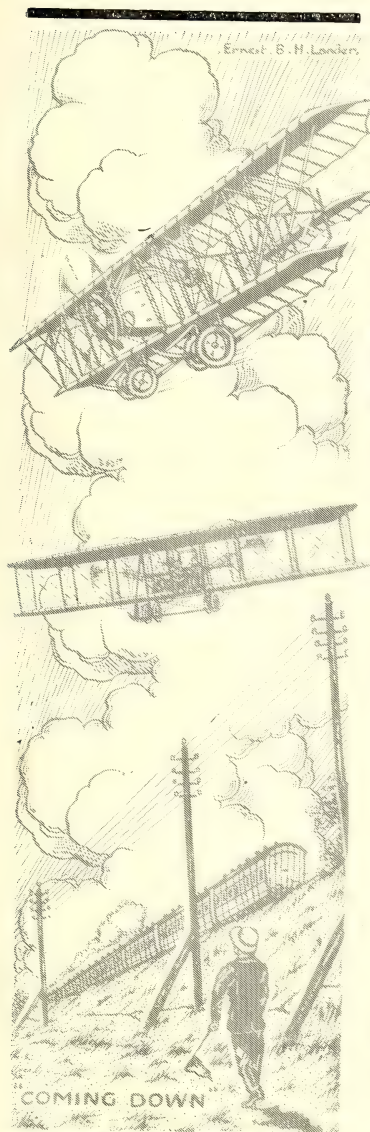
Captain Soames was with the first squadrons of the R.F.C. to go to France. He had been invested with the Military Cross by the King for his services, and had been awarded the French Legion of Honour. He was the son of Mr. F. W. Soames, an ex-Mayor of Wrexham.

Captain Soames will be deeply mourned by all who knew him, for his personal charm won many friends among those who were brought closely in contact with him, and his quiet courtesy won the respect and esteem of mere acquaintances. Before going to France he was for a considerable time an instructor at the Central Flying School, where he did much valuable work. An unfortunate accident on a dual control machine with a Naval pupil at the C.F.S., for which Captain Soames assumed the whole responsibility himself, caused him to be laid up for a while, but by the time the war broke out he was quite fit for service, as his good work in the early stages of the war showed.

Officers of his type are all too scarce, and his loss is to be mourned as much from a Service as from a personal point of view.

* * *

The inquest was resumed at Wybridge on July 7th on Major H. Tailyour Lumsden, the Officer Commanding at Brooklands, who was killed in the fall of an Avro biplane piloted by Lieut. Gerald Carpenter on June 21st. Lieut. Carpenter stated that the machine was fitted with dual control, which was being used, but when an inlet valve blew out when at nearly 2,000 ft. high the witness assumed control and endeavoured to land in a wheat field. The broken valve caused danger of fire.



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They descended within 200 ft. of the ground, and withness made a short right-hand turn to land. The machine, however, got into a nose dive, striking the ground almost vertically. The machine was wrecked and Major Lumsden was so injured that he died four hours later.

Answering the Coroner, Mr. Carpenter said the breaking of the valve was the indirect cause of the accident, but the nose dive was caused by a mistake in turning. If the nose dive had occurred when higher the machine could have been righted. A verdict of accidental death was returned, sympathy being expressed with Major Lumsden's relatives.

* * *

Mr. Henry D. Riley was killed while flying at the Brighton-Shoreham Aerodrome on July 12th. Local reports say: "Piloted by Mr. F. W. Goodden, 2nd lieutenant, R.F.C., he had just started on the homeward journey when the machine was observed to be on fire. It suddenly fell to the ground from a distance of about one hundred feet. Mr. Riley was instantly killed, and his body was removed to the Military Hospital Mortuary. Mr. Goodden, who was only slightly injured, was taken to the hospital. Mr. Riley, who resided at Hawkhurst, was twenty-seven years of age."

[Full particulars of the accident are unobtainable at the moment of going to press, but, as Mr. Goodden is chief test pilot at the Royal Aircraft Factory, it is possible that the fire was caused by defects in an R.A.F. machine, as in the case of the late Mr. Busk. The reference to the "homeward journey" appears to indicate that they intended to return to Farnborough.—Ed.]

* * *

There is probably no corps in the Army in which the privates and N.C.O.'s have less chance of distinction than in the Royal Flying Corps, but this does not mean that they do not run terrible risks at times and exhibit heroic coolness.

As certain medals have recently been awarded, it may now be permissible to relate how, during the dark days when it was necessary for the British Army to "advance backwards," a certain R.F.C. mechanic was left behind with a flying officer to grapple with an obstinate engine. The job was a long one, and little by little the fire of the German artillery crept near, searching the ground yard by yard along long lines of front. At last they got the range which included the disabled machine, on which the mechanic was working furiously, but perfectly systematically, and then blindly but with perfect regularity the shells began to drop first a quarter of a mile to the left, and then bit by bit nearer and nearer. Each shell fell ten yards or so nearer to the machine than its predecessor, and the nerve strain on both officer and mechanic increased in intensity with the fall of each shell.

Presently, the metal rain had approached within a hundred yards, the next shell fell at eighty, then at sixty, and so on, down to twenty or thirty. By this time the last petrol union was tightened up, and with the pilot ready in his seat, the mechanic rushed round and got the propeller started. As he scrambled into the fuselage and the biplane started scudding along the ground, the shell whose turn it was to burst fell on the spot where the machine had been standing.

This was but one incident of hundreds. So furiously had the nucleus of the Flying Corps been working at this time in assisting to save the Allied armies that this mechanic had neither shaved nor undressed for a month.

* * *

An R.A.M.C. Territorial, writing at 1 a.m. from a base hospital in Belgium, says:—

"Do you know that we have been in this place for three weeks (it is only five miles behind the line) and the number of Boche-planes I have seen over here after three weeks of ceaseless vigil is 'one.'"

"This reckless hero came over one morning about 4

a.m. flying with careless abandon at a height of about 14,000 feet, and passed away to the west. Immediately three Allied machines started out from a neighbouring aerodrome—a Morane parasol, a Voisin blindée and a large Avro. The Morane went right up very high and hung about over the course the Boche had taken, the others climbing up to a great height to the left and right of the Morane, who seemed to be running the show.

In due course back came the unsuspecting son of Prussia, this time flying with the utmost *sangfroid* at 9,000 or 10,000 feet. Just as he got about a mile this side of the line and (as it happened), just too late, the Morane spotted him. Shades of Hamel! That Morane whisked round in her own length and dived straight for the audacious Albatros—a sheer dive, I should say, of about 1,000 feet. About half-way down the dive the Albatros saw the Morane, and fine as was the Morane's dive, the Boche's was finer, and I think he got home.

"The Morane chased him till he must have been very low over his own lines, and although I believe he landed safely, it was a good deal nearer to his trenches than he meant it to be. I did not see the end of the chase, as the two disappeared behind a ridge, but in due course I espied the Morane making for home, and watched her jubilant spiral till she disappeared behind the poplar-fringed hill which overlooks the aerodrome.

"Since then I have seen no Boche-planes. I dash out to have a look whenever I think I hear our Archies puffing, but it generally turns out to be the sergeant-major coughing, or our tame plumber 'mending' the Primus stove."

AT SEA

A passenger by the steamer "Hollandia" has informed the "Telegraaf" (Amsterdam, July 7th), that the previous afternoon, when an hour distant from the Noord Hinder Lightship, two aviators dropped bombs on a vessel which passed the "Hollandia" at a distance of about half a mile. The vessel zig-zagged and hoisted the British flag. The bombs apparently did not hit, but straddled the ship. The aviators afterwards disappeared in the direction of Belgium.

FRANCE.

A communiqué issued in Paris on July 7 regarding the operations in the Dardanelles says:—

On July 5th, the Turks made a general attack, the most important which they have delivered.

Enemy aeroplanes several times bombarded our lines.

At the end of the day fifteen Allied aeroplanes flew over the Turkish aerodrome at Chanak. They threw several bombs and a large shell struck the principal shed.

* * *

The communiqué of July 10th says:—

Our aeroplanes bombarded yesterday the railway stations of Arnayville and Bayonville (south-west of Metz, on the Metz-St. Mihiel railway), as well as the military huts at Norroy (north-east of the Bois le Prêtre). Twenty-two bombs and 100 darts were dropped.

* * *

The communiqué of July 11th says:—

One of our aviators this morning brought down a German Aviatik in the vicinity of Altkirch (in Alsace), the enemy machine falling in sight of our lines.

* * *

The communiqué of July 13th says:—

A squadron of 35 aeroplanes, despite strong wind, bombarded the strategic railway station constructed at Vigneulles les Hattonchatel, which serves the Tranchée de Calonne and the Forest Apremont. 171 shells of 90 mm. each were dropped. All machines returned safely.

* * *

An interesting article in "Le Petit Journal," written by l'Abbé Th. Moreux, points out that, according to his calculations, there is much less likelihood of successful

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airship raids during the summer than in the winter. He argues that owing to the air being cooler, and therefore more dense, in winter and spring than in the summer, an airship has more lifting power, whereas in hot weather the dilatation caused by the higher temperature acting on the volume of gas decreases its lifting value, and that every degree of temperature deprives it of a notable amount of lift.

It is true that at the higher altitudes it will find better lifting conditions, but the lowering of temperature will not make up for the gas which it lost at the start.

Moreover, the weather in summer is less reliable, and owing to the Germans being deprived of meteorological information from all parts of the world, their airships are more likely to be taken by surprise by sudden storms.

Father Moreux further points out that one single millimetre of rain deposited on the surface of a Zeppelin increases its weight by over 2,000 lbs., and so reduces its lifting forces to practically nothing. It is true that the water falls off the rigid surface of the airship, but it certainly impregnates everything hygroscopic and hangs in interstices sufficiently to add materially to the weight.

The variation of winds is also much greater in the summer, which adds to the difficulties of airship navigation. Father Moreux winds up by saying that the true aerial torpedo is the aeroplane.

GERMANY.

The communiqué of July 6th says:—

Our aviators attacked the aerodrome at Corcieux, east of Epinal, and the French camp on the Breitfirst, east of Krüth, in the Vosges.

* * *

A "Daily Mail" correspondent at Bâle sends a description of a huge German triplane which is said to be driven by eight Maybach motors such as are used in Zeppelins. The engines are coupled in pairs and each pair drives one propeller. The machine will fly with only two propellers.

It is said that the machine can carry twenty men. There are four machine guns on board, and a revolver gun is mounted on an armoured tower. All steering, with the exception of longitudinal control, is done by the motors.

The whole machine is armour plated, and the underpart is shaped like an inverted roof, presumably to deflect bullets, an idea set forth in THE AEROPLANE years ago.

The aeroplane is said to be three times as big and strong as the usual flying machines. Six of these giants are finished. The intention is said to be to use them for attacks on trenches, while the smaller machines will continue to be used for patrolling and for controlling artillery.

Doubtless the above account is not strictly accurate, but it indicates the German line of thought and action. Probably we in this country will have one or two similar machines ready shortly after the war is over.

ITALY.

The communiqué of July 5th says:—

Last night our dirigibles bombarded effectively enemy encampments in the environs of Doberdo and the Dornberg-Prvacina railway junction, damaging the line and the station of Prvacina. Our airships, which were canonaded by anti-aircraft guns, returned safely.

* * *

The communiqué of July 8th says:—

On the night of the 6th inst. our airship bombarded effectively an important railway junction north of Opema (? Opicina).

On the morning of the 6th, a flotilla of our aeroplanes succeeded in throwing a large number of bombs on the Austrian aviation ground, near Aisovizza, east of Gorizia, causing fires.

Another aeroplane threw bombs on the station of Nabresina. The aviators, who were the object of artillery and machine-gun fire, returned safely.

It is stated in Rome that General Cadorna's latest bulletin is chiefly remarkable as showing the activity of Italian aviators along the loop line between Nabresina and Divatcha, in order to interrupt the communication of Gorizia with Laibach and Fiume.

* * *

A message from Venice to the "Echo de Paris" states that Venice is guarded by a squadron of seaplanes manned by French naval aviators under Lieut. Conneau (better known as M. Beaumont).

Every day the French aviators fly over the Gulf of Trieste and watch movements of the Austrian ships. On July 5th the Austrian lighthouse at Salvore was bombarded by the aviator Rouillet.

* * *

The first German aviator who bombarded Venice on the morning of the declaration of war was brought down by an Italian shell and fell into the Lagoon at Venice. The aviator was wounded, and at the Maritime Hospital it was found necessary to amputate one of his legs.

* * *

It transpired at the trial by court-martial of the captain and three members of the crew of the German steamer "Lemos," at Venice, for espionage, that the captain and chief engineer had been detected signalling to an Austrian aeroplane. It is said that the Austrians were warned of the departure of French and Russian vessels from Ancona. The two chief conspirators were sentenced to ten years' imprisonment.

* * *

It is reported from Venice that Lieut. Francesco Pricolo, who, on dirigible P. 4, bombarded Pola, says the undertaking was so risky and dangerous that he can hardly realise he is still alive and unhurt. For 15 minutes the ship was exposed to the fire of 50 cannon and 1,000 rifles, while 40 flashlights played around him. The exactitude of the figures is perhaps due to news agency imagination. Fortune favoured him, however, as the clouds obscured him from view. Before being discovered, the dirigible bombarded the arsenal, which was set on fire. Although 5,000 feet up, the crew heard the explosion of their bombs.

* * *

To complement my remarks about the reported presence of MM. Brindejone des Moulinais and Vedrines in Italy, I learn that Venice owes much of her present undamaged condition to the co-operation of French aviators with the Italian air forces there.

As always threatened, Venice was to be the first Italian city to be "wiped out" by Austria. This knowledge was acted upon very thoroughly, it would appear, and well in time, by the anti-aircraft people. The Venetians having been once bitten are now very smart in getting under cover at the first prospect of "arrows from the blue," the only things from there which they are scared of.

The first instance to my knowledge of an observer finding that he could not do so to his satisfaction in the air, and so insisting on being landed in order better to sketch the lie of the country, comes from the Carso district. While he plied the pencil, the pilot flew about to keep the engine warm—there has been snow there quite lately—till signalled to come down and pick up the cool observer. Their happy home-coming puts a pleasant tail to the tale.

Austrian aviators are being used for the distribution to the Italian armies of couleur-de-rosee pamphlets describing the paradise in which prisoners of war live happily in Austria. Some war work! Subject to permission by the authorities, the condition may be summed up in the official way, "nothing to report"—yet.

This war might be working for the regeneration of the Press, except that suppression always means a breaking-out elsewhere. T. S. HARVEY.

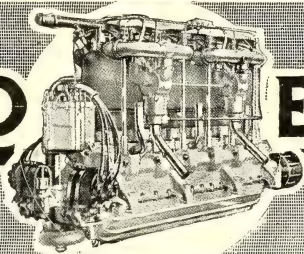
AUSTRIA.

The communiqué of July 6th says:—

The Italian aviators threw three bombs on Trieste without doing much damage.

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BELGIUM.

The "Echo Belge" reports that a Zeppelin developed a defect in its motors a day or two ago, and fell upon a farmhouse at Assenede.

Some of the aeroplanes which raided the Zeppelin shed at Brussels afterwards flew over Malines and bombed the arsenal there, but it is reported that not much damage was done.

DENMARK.

It is reported from Copenhagen that Captain Hauff, of the German mercantile marine, and a Danish inn-keeper named Jørgensen, of Bornholm, have been found guilty of having given information to a foreign Power regarding the movements of aeroplanes and of vessels and mines in Danish waters. Captain Hauff was also accused of having assisted German officers interned at Aalborg to escape. Hauff was sentenced to 20 days' and Jørgensen to 14 days' imprisonment.

The Danish authorities seem to have taken a very lenient view of the offence.

* * *

It was reported from Copenhagen on July 10th that three of the 23 German aviators interned in Denmark had escaped while walking in the court-yard of the barracks at Odense. All the necessary measures were at once taken to prevent their getting away from the Island of Fünen.

MONTENEGRO.

Sir J. Roper Parkington, Consul-General for Montenegro, has received an official telegram from Cetinje which contains the following:—

On the 4th and 5th inst. the Austrians vigorously attacked the Montenegrin positions near Grabovo, but all assaults were repulsed: the attacking forces were assisted by machine-guns from several Austrian aeroplanes, which flew over the entrenchments held by our troops.

U. S. A.

The proposed Constitutional amendment to provide for aerial forces in the Militia of the State of New York was considered at the meeting of the Board of Governors of the Aero Club of America and approved.

The amendment was introduced at a recent session of the Constitutional Convention by the Hon. William P. Bannister. It amends Section III of Article XI of the Constitution by the addition of the two words "and aerial," so that said Section III will read as follows:—

"The Militia shall be organised and divided into such land, naval and aerial, and active and reserve forces, as the Legislature may deem proper, provided, however, that there shall be maintained at all times a force of not less than ten thousand enlisted men, fully uniformed, armed, equipped, disciplined and ready for active service. And it shall be the duty of the Legislature at each Session to make sufficient appropriations for the maintenance thereof."

The amendment has now been referred to the Club's Committee on Military and Naval Affairs, which is composed of the following authorities:—Cornelius Vanderbilt, Chairman; Major F. L. V. Hoppin, N.Y.N.G., Brig.-Gen. Robert K. Evans, U.S.A., Lieut.-Col. Samuel Reber, U.S.A., Capt. A. S. Cowan, U.S.A., Capt. Mark L. Bristol, U.S.N., Lieut.-Comm. H. S. Mustin, U.S.N., Major Charles Elliott Warren, N.Y.N.G., Lieut.-Col. C. DeW. Wilcox, U.S.A.

In heartily approving this amendment the Governors of the Aero Club of America expressed regret that the Militia cannot, for lack of aeroplanes, manoeuvre under conditions closely approximating those of modern warfare. It was resolved that other States, particularly those on the Atlantic and Pacific Coasts, which are open to attack by hostile battleships, aircraft and submarines, be urged to make similar provisions at the earliest possible moment.

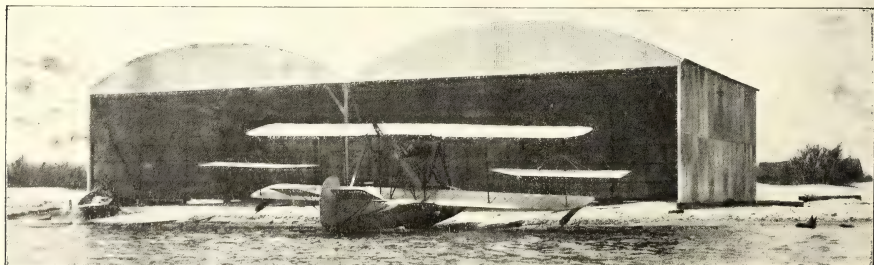
Recently the Aero Club launched a campaign which had for its object the equipment of the National Guard and Naval Militia of every State with aeroplanes and flying-boats. As a result, two aviators have offered their aeroplanes to the State of New York for the period of the manoeuvres and a flying-boat and a course of instruction for both a pilot and a mechanic have been presented by the Curtiss Aeroplane Co., of Buffalo. One of the aviators to offer his machine and his services as pilot was Charles F. Niles, of New York. Other machines have been presented to the Illinois Naval Reserves, the Naval Militia of Pennsylvania and to the National Guard of Oklahoma, and almost 8,000 dollars in subscriptions have been sent direct to the Aero Club of America.

SWEDEN.

Recently the well-known Swedish naval aviator, Captain Dahlbeck (trained at the Grahame-White flying school) played the character of a modern Robinson Crusoe. With his brother-in-law as a passenger, who serves his compulsory enlistment with the aviation department, he undertook a flight round Sweden on one of the hydro-aeroplanes belonging to the navy, when engine troubles brought him down in Ostergotland's belt of rocks and islands girding the coast.

Helpless, they drifted about for six to eight hours, till the waterplane drifted ashore on an uninhabited island, from where Capt. Dahlbeck and his passenger tried to communicate with the surroundings by running up their shirts, firing revolver shots, and when dark came, by lighting a fire. But in vain; no one observed their signals.

Meanwhile much anxiety befell on the fellow aviators, thinking a fatal accident had occurred. There was a telephoning the whole day between the various coastal stations—without any results, and destroyers and quick-going motor boats were sent out. The shipwrecked were without much provisions, and the night passed, when rescue came next morning, as the destroyer "Viga" appeared by the little island, tugging then the hydro-aeroplane home.—Hi.



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CHAPTER III.

SELECTION OF MEN, CHARGE-HANDS, AND ARRANGEMENT.

The careful selection and arrangement of the employees is obviously a matter which must facilitate the production of finished articles. The exact methods of dealing with the employees depends on the circumstances, but from the point of view of the employer the first thing must be confidence in his superintendent of the shops, and given satisfaction on this point, half the battle with the labour is settled.

The superintendent of the shop—i.e., the man mainly responsible for the employees' work and the general output, will know the class of labour required from time to time according to the nature of the work undertaken, and will select his employees accordingly; he will form his grades of rates from the foremen and charge-hands down to the boys, and a good man will regulate such rates in a manner that will avoid friction and dissatisfaction and yet the individual employees will be receiving rates of pay proportionately with one another in accordance with their respective abilities or "outputs"; the latter logically being synonymous with the first, although actually not the case as between one class of worker and another, the reason apparently being a question of human nature or endurance, a question yet to be solved.

The superintendent will be in touch with the timekeeper and furnish him with written information of men taken on and those paid off from time to time; in the first case it is necessary to take a record of each employee's name and address, age, nationality, class of worker, last place worked at, rate commenced at and date commencing; after the employee has been signed on by the superintendent he will be given his shop number and time or clock card.

Each day the timekeeper will furnish the superintendent with information, written up in column form for preference, of the lost time by each man; this information kept in a book in column form can be seen for perhaps 12 days at once, and thus not only will the employee's record for the day in question be seen, but a comparison can be made of the previous days' records.

The men having been placed on the different machines or benches and foremen appointed, much will depend upon the capabilities and manner of the foreman in dealing with his men; usually the man in the position of foreman is one with some years of machine-shop experience behind him, while in the other shops with experience of that or similar work. Unless such a man is obtained the quality of the work done and speed of the work cannot be of much value, at any rate, for long.

When the numbers of employees have attained large proportions and where numbers are working on similar work it is necessary to sort the men out gradually and group them by series of benches, so that ultimately certain classes of work can be deputed to certain benches, and so on. In the ordinary course of events the tube-workers, acetylene-welders, braziers, coppersmiths, and workers of different trades are separated out together, but reference is chiefly being made to such classes of workers as, for instance, joiners or metalworkers.

Having separated the workers out to a degree it is a good principle to appoint charge-hands to each bench; these men, being as it were gang-men, are responsible for the work of the bench, and in some cases solely responsible for the output of the bench. For repetition work, which the majority of work during these days is, this principle of splitting the shop up so that benches can specialise in different work will automatically be found expeditious and economical: the men get to know their work and, providing there is not a great element of

monotony, they will gain greater interest in the work, which must all assist towards efficiency and speed in output.

Whether truly or not, the average worker is written down as a man incapable of taking an interest in his work; the proof of the pudding is in the eating, and the country is at war; the workers have and are supplying their relations in the fighting-line; they are human, any way, and in most cases where the shops in the mind of the writer are concerned there is the element of interest; it can be brought out or it can be squashed; the organisation and management of the shops are the chief constituents of the pudding.

CHAPTER IV.

TOOLS, STORES, AND INSTRUMENTS.

In most classes of work, and particularly in the manufacture of munitions of war, accuracy to fine limits is essential, as already pointed out; parts which may have the appearance of being perfectly made may still be over or under size and outside the specified limits of manufacture, and are therefore rejected and become so much scrap.

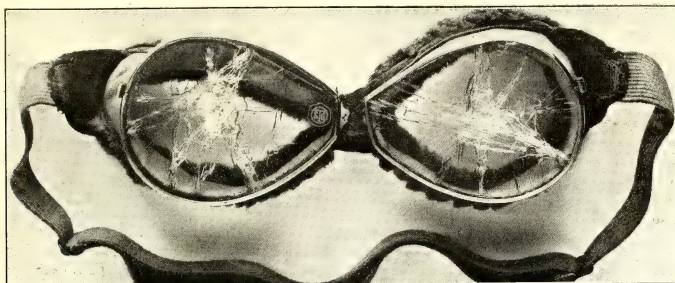
It is doubtless the case that some delay in delivering articles which the contractors have undertaken to manufacture has occurred through the employees not being accustomed to the fine limits of manufacture and through their running away with the idea that what are described as "within ordinary commercial limits" will be sufficient.

Unless the workers have proper facilities for gauging their work and checking the same it is impossible for them to turn it out to satisfaction. One of the methods used by firms who are experienced, and which is the best course of procedure, is the proper organisation of an inspection or viewing department and the careful inspection of parts or articles during the course of manufacture. This is a method for cutting down the wastage of articles which may be scrap; the question is fully dealt with in Chapter VI.

The fact, however, that the viewers may be keen and will not let articles get through unless correct to requirements is no use unless the workers themselves are in the position to be able to eliminate rejections as much as possible; the only method to correct such wastage is by the provision of proper gauges and instruments, as well as good tools. There are many instances in these days where firms, perhaps small shops employing not more than 100 men, have gone out for and accepted work for munition contracts and have had to ask for the loan of screw gauges to check their work, although perhaps the absence of a proper surface plate and protractor is the more surprising in a shop which professed to specialise in the making of small metal parts.

A well-equipped tool store is not only a necessity where good and fine work is the object of the business, especially in these days, when the majority of engineering firms are engaged on the manufacture of parts for munitions of war; a tool store with perhaps only £100 worth of good gauges and instruments will not only be the means of saving any such firms a large amount of needless expense in rejections when the work is first attempted, but will be a great assistance towards making deliveries as promised.

It is quite true that such tools as gauges, protractors, micrometers, callipers, screw gauges, etc., cannot in these days be bought at sight, but without them the work cannot be turned out satisfactorily; and if they are ordered directly the firm in question is setting out for fine work they will be obtained quicker than if the question is left till the rejections roll back and the contract or order is on the point of cancellation and the profits have been spent in bad work.



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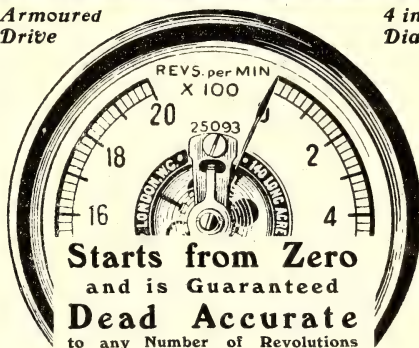
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The tool stores should be separate from the general or finished stores, and should be in charge of an attendant who may have the opportunity of setting out the various tools, cutters, drills, dies, instruments, etc., in an organised manner: cutters, for instance, on nails on a board, drills in racks, instruments in glass-door cases on nails.

The best principle, then, to deal with these tools is to provide employees with a set of tool discs each, each stamped with the employee's number; when tools or instruments are required the charge-hand or foreman should write a requisition slip to the tool-store attendant, who, in exchange for the slip and one disc from the employee, hands out the tool, the disc being placed on the nail or in the rack where the tool comes from. This disc then remains in place of the tool until the same is returned.

Periodically, for preference on each Saturday, all tool discs should be cleared from the tool store by the return of all tools loaned; this would not apply to such sets of tools as files, hammers, etc., which will be issued out to each employee according to his class of work and all on one disc.

The timekeeper would have instructions not to allow any employee to be paid off until all his discs have been turned in. By this method a good check can be kept on the tool store stock and also proper records can be kept of all broken or expended tools.

The importance of this question of an efficient tool store cannot be too strongly emphasised; it is true that in many shops the employees among themselves form tool clubs, which in many cases are very beneficial to the work; but for any reliance to be placed on such a scheme for the elimination of the tool store and supposed practice of economy is only false and will invariably lead to the same or similar phase as that which is arrived at where, as an exaggerated instance, the two-foot rule is the only instrument of "precision" in the shop.

(To be continued.)

A NEW COMBINED COPYING AND FINISHING LATHE.

A machine has recently been introduced by Messrs. Wadkin and Co. which embodies new features of construction which appear to make it more accurate and efficient than any other machine of its kind; it is a mechanical tool of the highest class, and has been specially designed for aeroplane struts and fairings. It is, of course, equally successful on other classes of work. The machine will take work from the most delicate sizes up to 8-inch diameter by 8 feet long, and will produce an exact facsimile of any model placed into the machine.

An entirely new and important feature incorporated in this machine is that the work is ground by means of an

abrasive belt of high linear speed which follows immediately after the cutter, and produces a finish on the work of the highest quality. Further, the method of grinding adopted ensures the work as it leaves the machine being dead accurate at all points. This, of course, is essential in aeroplane work, and cannot be guaranteed even when employing the most expensive hand labour.

Another feature which is particularly important in long aeroplane struts is that springing and vibration of the timber must be entirely eliminated. This has been overcome after a good deal of expense in experimental work by adopting a "steady" of special design which supports the timber close to the cutter and grinding belt. Moreover, this "steady" enables delicate work of short length, which would otherwise have to be placed into the machine one at a time, to be operated in long lengths, and afterwards cut off, thus saving considerable time and labour.

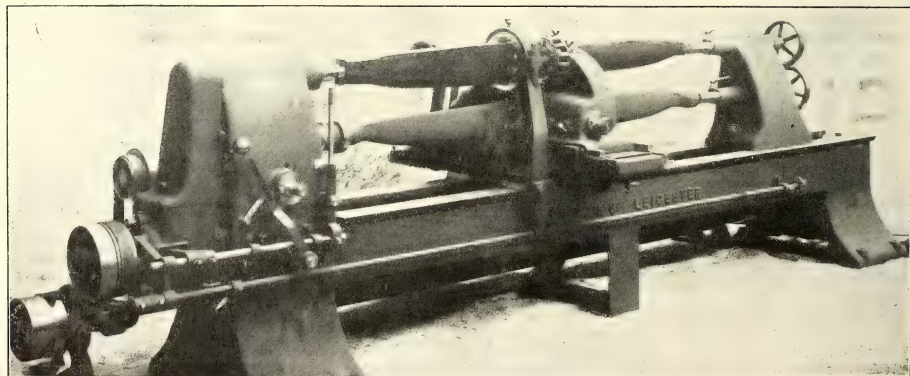
The feeding mechanism which controls the cutter and grinding headstock carriage is arranged to feed from right to left. It has two changes of feed $\frac{1}{4}$ inch and $\frac{3}{8}$ inch to each revolution of the work being turned, and the change from one to the other can be made whilst the machine is running if desired.

The cutter-head is fitted with eight cutters, and will turn with equal success either hard or soft wood. The spindle is mounted on ball bearings running in dust-proof housings, and the thrust is taken by a special double ball thrust washer. It is mounted upon a sliding frame which reciprocates on ball bearings in a path to correspond with the shape of the original placed into the machine.

The grinding headstock also reciprocates on ball bearings on the opposite side of the work. This arrangement enables the pressure of the cutter-block headstock against the former to be neutralised by the pressure of the grinding headstock on the opposite side, thus preventing any deflection of the former which might otherwise take place. The grinding pulley spindle is mounted on ball bearings running in dust-proof housings. Each headstock is provided with a guide roller having a fine thread-screw adjustment to allow the depth of cut to be varied. The headstock rollers are kept in contact with the original by means of springs with provision for adjusting and equalising the pressure against the former.

Provision is made for opening out the headstocks on the completion of the work, and for the quick return of the carriage to the starting end. An automatic stop and safety spring brings the carriage to rest at any desired point.

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the mandrels may be varied by means of a lever operated from the front of the machine to suit the diameter of the work, and this is arranged so that a constant rate of movement of the timber past the cutters is obtained irrespective of the perimeter of the section at any point. This can be operated whilst the machine is running.

The countershaft is placed on the floor at the back and close up to the machine, and consists of a steel spindle running in three self-oiling swivel bearings and fitted with a drum for driving the cutter-head and grinding belt, the pulley for driving mandrels, the pulley for driving quick-return motion and fast and loose driving pulleys. The loose pulley runs on a phosphor-bronze bush, and is fitted with screw-down grease lubricator. Suitable striking gear is provided which is operated by a lever from the front of the machine.

The machine combines the best materials and workmanship throughout. It is built for hard continuous wear, and is provided with ample means for lubricating the various parts.

Details supplied with the machine are as follows:—Whittle belt for driving cutter-block; driving chuck for originals; spur driving centre 2 inches by $\frac{3}{4}$ inch; cup centre 1 inch diameter; dead centre; cutter-block complete with 8 cutters; setting jig for cutter-block; guard over cutter-block; $1\frac{1}{4}$ inch wide sand belt; countershaft complete with striking gear; set of spanners.

Altogether, the lathe strikes one as being a very fine piece of work, and the reputation of the firm is sufficient guarantee that the workmanship and material are right. When one sees men laboriously shaping out struts by hand, and thinks of how the output can be speeded up by using proper machinery, one begins to perceive the meaning of accelerating aircraft production.

FOR AERO ACCESSORIES.

Over sixty years ago the firm of S. Smith and Sons commenced business as makers of watches and scientific instruments. There was evidently a man of push and go at the head of the firm, for while the watches had to be wound up, the business never reached that unpleasant stage, and to-day it has developed into a great manufacturing concern which is playing no small part in the conduct of the war.

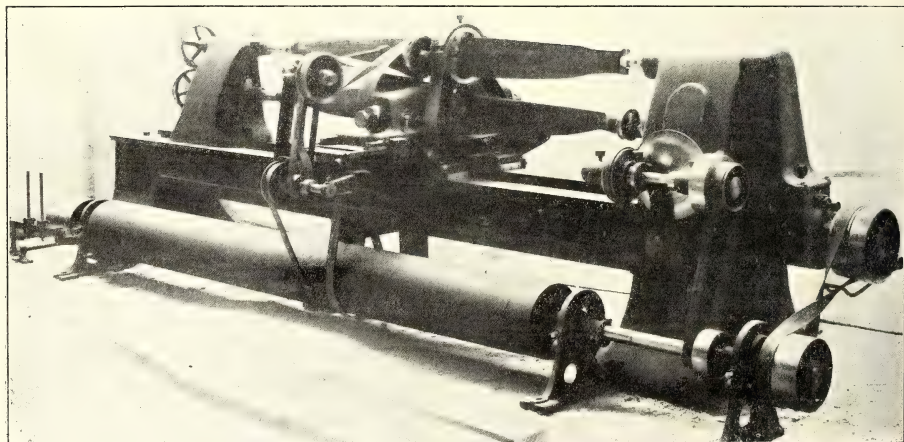
In 1899 it was formed into a limited liability company, and in 1904 the sale of motor accessories was added to the original business. Steadily increasing sales made it necessary to take new premises in Great Portland Street, W., and the name of the company might almost have been changed to Motor Successories, so large a connection did it build up.

Twelve months ago a new company, bearing the title of S. Smith and Sons (Motor Accessories), Ltd., was formed, with a capital of £100,000, half of which was offered for public subscription and readily taken up. The prospectus referred to their well-known speedometers, carburettors, dynamos, self-starters, and other motor accessories, but said nothing about the aviation industry. As a matter of fact, however, an enormous trade is being done by them in instruments and fittings for aeroplanes and dirigibles. Almost every kind of instrument for use in the R.N.A.S. or the R.F.C. can be supplied at Speedometer House, the head depot of the firm, and bomb-dropping appliances, darts, signalling-lamps, and other aerial accessories are being turned out in large quantities.

The development of this side of the business has necessitated the laying down of much new machinery, and a new factory of a most up-to-date kind has been erected at Cricklewood. This entailed a large initial cash outlay, and, under the circumstances, it became necessary to enlarge the financial resources of the company. A meeting of shareholders took place on Monday, July 12th, when a resolution to increase the capital of the company from £100,000 to £200,000 was carried unanimously.

As showing the importance and magnitude of the work undertaken, the chairman said that when application was made to the Treasury for permission to issue fresh capital the request was promptly granted. One gathers that the first annual report and balance-sheet will be published at the beginning of September, and it seems that the results of the year's trade will be gratifying to the shareholders.

The accessories department at Great Portland Street is under the able management of Mr. W. J. Harvey, whose long and extensive experience of the motor trade enables him to deal with sympathetic understanding with the various demands of the newer means of locomotion.—D. W. T.



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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

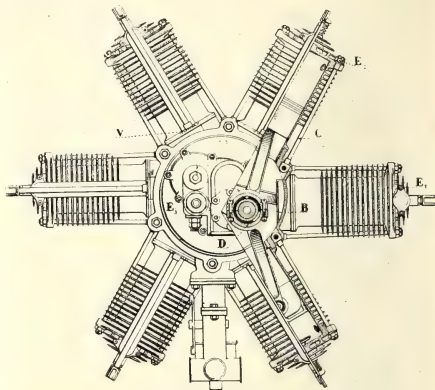
"Ladies hand gents," said the showman, in the famous series of *contes drolatiques*—not by Balzac—"ere you be'olds the great hornthorinkus, wot, in spite of 'is name, never 'as no 'orns, and 'as to be kep' in a rahnd cage, has you will hobserve, whenever 'e ain't hout a-preformin' hof 'is hexercise in the hopen, which is deo to 'is natural 'abitat and not to 'is narsy 'abits." . . . For the moment I forget any other reason the showman gave; but somehow irresistibly, though vaguely, the Anzani motor reminds me of this animal. Perhaps because of the absence of any horny excrescences of complication or superfluity that afflict certain other aeromotors. Or because of the round casing in which, like most radials or rotaries, it arrives from the works, and is kept until it is wanted to perform. Perhaps, again, because its natural habitat is also in the open. Or perhaps—since very unlike reminds as well as very like—because it has no nasty habits that I know of. Or because—here I take its maker's statement—its fame has spread "to all corners of the round world." But who can account for the mental processes of the frivolous? Who can even say why little boys, the wisest of human beings, suddenly laugh aloud in church?

THE ANZANI RECORD.

Yet seriously—as it seems one must always take that gladsome creation, a motor, and all thereunto belonging—the fame of the Anzani has been well and truly built upon performance in the open, of no common kind. The first series shown in Paris at Christmas-time, 1908, were enough admired; but then Louis Bleriot, the following July, not only made the longest French cross-country flight to date by flying from Etampes to La Croix-Briquet, but a fortnight later flew the Channel for the first time with the same 25-h.p. three-cylinder fan-type Anzani, and thus won the pioneer's record for himself—commonplace as the feat seems to-day—and special honour for its maker. Then through the next year and more—in the course of which the Anzani model was several times re-designed in detail—these motors did so well that they secured a wholesale series order—the first, I believe, ever given—from the French War Office; and in September, 1911, W. H. Ewen made a British record with one of the new 28-30-h.p. type by flying across the Firth of Forth. Then came the Y-type, followed by the five and six cylinder radials of 45 and 60 h.p.; and early in 1912 Caudron made the then world's speed record of 105 kilometres with one of the 35-h.p. Y-type; and Caproni, with another, secured the distance, speed, and non-stop record of 149.2 kilometres in 2 hrs. 5 min.

AND LATTER DEVELOPMENT.

Later, in 1912, the larger five and six cylinder Anzani's were again re-designed in detail and their power much increased; and in August the first ten-cylinder, 100-h.p. Anzani—the double of the "five"—appeared for the British Military Trials. Then in April, 1913, the 100-h.p. Anzani, in Champel's big biplane, actually scored six world's records in one day, for distance, duration, time, and speed, with four passengers besides the pilot; and Philippe Marty, on a Caudron, beat the then height record for pilot and three or four passengers with a motor



The typical Anzani arrangement.

of the same type. 1913 also saw the production of the ten-cylinder 125-h.p. Anzani, and later the twenty-cylinder of 200 h.p., the first of which was sent to the United States, and did extremely well in sea-plane and flying-boat work. And so, in a steady career of satisfactory and trustworthy performance, the Anzani motors of all types went ahead through 1914, until the outbreak of war gave them the greatest of all possible opportunities of proving their quality in the hardest service.

ITS SCORE OF SILENCE.

Of course, the several reasons why, that may or might be cited, are the more interesting; but at the moment, nevertheless, for Service reasons, the more important matter is the superficial—indeed, most immediately obvious—detail of the twin exhaust collector pipes, which perhaps more than any other, specially adapts the Anzani motors for military use. For—as we saw in the 100-h.p. model on the Handley-Page biplane—the long-neglected military essential of silence can be assured. It is true that, as I write, a device is now under official test—as it might have been any time these five years—whereby the exhaust of a rotary motor is claimed to be absolutely silenced. But, pending that result, the inevitable score of the radial over the rotary is the easy possibility of silencing, merely because its cylinders are stationary.

AIR-COOLED RADIALS AND V-TYPES.

The next physical scoring point—as concerns an air-cooled motor, and in this case the Anzani—is that of the radial over any air-cooled multi-cylindered V-type. The degree and rapidity of cooling—be it more or less—must be the same for all cylinders alike in a radial; whereas in a V-type, unless it be very carefully—not to say scientifically—shrouded, and fitted with a strong and effective fan, the cooling cannot be even all round. The value of cycle-motor practice and experience has always been manifest in the Anzani motors from the outset as it is to-day. But it was no less available in the



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case of a famous British make—well enough known at any rate in the early days of aviation—the V-type aeromotor edition of which nevertheless failed to make good, though there was nothing amiss with its material or detail design; simply because the application was wrong, and the above-mentioned special necessity neglected or misunderstood. Had it been a radial, there was nothing to prevent it succeeding.

WHY SOME OTHERS FAILED.

More than one promising horizontal-opposed air-cooled motor, too—British as well as French—beside the Nieuport and Clement, also went out of use, because directly the demand for power increased, and makers attempted to mount other cylinders behind the front pair, overheating set in so badly that the motors only ran as long as they were oil-cooled. Motor-cycle lubrication experience, too, let them down, because aeromotors, on the contrary, like a thinner oil; in fact, must have it, to be effectively lubricated for their relentless work.

Again—as early enthusiasts will remember—in most respects no more beautiful motor-conception was ever designed than the Pipe V-type aeromotor. In certain details—notably its concentric valves and their setting-in—nothing better or prettier has been seen. Behind it there was all the inventive skill of Pfanders, and his hardly less brilliant associates, and all the constructional ability of one of the leading firms of Belgium, not to say Europe. Actually, it passed their test-bench. Yet no sooner was it mounted in an aeroplane than it failed hopelessly: solely because its air-cooling system was all wrong. Had its cylinders been merely air-jacketed—especially if thickly saltglazed—and those jackets had been minutely perforated at the top: and had the excellently-designed rotary suction-fan consequently been given some resistance to pull at—thus to hasten the air-inrush velocity upon the cylinder heads, where cooling was needed first—all might have been well. Instead, the cylinders had only air-skirts,

and belled at that. These were fitted internally with spiral vanes; the idea, no doubt, being to disperse the air evenly around the cylinder walls. But being open at the bottom, these skirts gave the fan nothing to pull at, and no air to draw over the cylinder heads except what had already been heated by the cylinder-wall convection! So much for the richly-endowed experiment of Brussels against the obscure experience of the Serres de la Ville, Paris. Believe me, the air-cooling of big motors has a long way to go. And it is still far from being the most satisfactory feature of even the best and most widely-known of the V-type.

OBSCURATIONS AND FACTS.

We are, it is true, told that the section of the radiating ribs or fins should be as nearly as possibly enclosed by two imaginary opposed parabolic lines to accord with the laws of propagating and dissipating heat. Also, that on the other hand, the importance of reducing heat-losses—and hence thermal efficiency-losses—through the cylinder walls has been established as the outcome of the labours of Professor Aimé Witz, of Lille. As a matter of fact, with all due respect to M. Witz, the whole of this was set forth in very definite and minute detail about the time he was probably running round in a black jean pinafore, by one Alphonse Beau de Rochas; all of whose findings govern motor design to-day, while his indication of long-stroke practice as the better compromise is latterly more than ever confirmed by experience.

As to the science of parabolics—well, I quite agree as to the term, which exactly expresses its value; though it could be as well said in one syllable. To begin with, the so-called "laws" referred to are merely past observations of results that depended on all sorts of quite inconstant conditions. But as the ever-to-be-execrated Hunzollern truly remarked, you can always get some pedant to justify anything after the fact. And parabolas themselves, equally inconstant, may represent all sorts of curves, so long as they are of equal value and relation to one another.

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THE SECRET OF EFFICIENT AIR-COOLING.

No, let us, for goodness sake, clear our investigations of the fog of "scientific" cant. What is really meant—and upon a system that governs many still obscure things beside the design of a radiator-fin—is that it is largely, if not wholly, a matter of nodes and anti-nodes, and long or short curves thereto and from. And that you strike your curves—the value, depth or flatness of which is purely of your own choice and experience gained from trial and error—from your cylinder axis as the prime anti-node point; the node, shallow or deep, being somewhere on your cylinder wall; and the corresponding anti-node at the fin-edge. Flattening your curves here or there as you may be inspired, will consequently lengthen the distance between inner and outer anti-nodes—i.e., the width of the fin—all well so long as you do not spoil the natural convection-flow by bringing the node anywhere outside the line of the cylinder wall. For this reason, rather than this excessive width, better have an extra fin on the given length of cylinder surface to be cooled.

For the rest, merely keep the fin-section true within its anti-nodal curve; at the same time keeping the position of the nodes on an even vertical curve drawn from the top of the inner cylinder wall outwards to the outer surface, and inwards again, over the length of surface: which, in my opinion, should extend from the outer head-surface of the cylinder downwards to within at least an inch of the transverse outstroke line. And for this reason, to sympathise with this curve, the thickness of the cylinder wall—i.e., the outer surface—should curve slightly outwards from below upwards to the top third of the cylinder working space; and from that point—where the combustion effort and temperature are the greatest—fall ever so slightly inwards.

(To be continued.)

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At Wakefield House, Chapside, to which place one might feel inclined to apply the hackneyed expression, "a veritable hive of industry," there hangs a large engraving depicting the killing of Wat Tyler in 1381 by Sir William Walworth, then Lord Mayor of London. It may not yet be generally known, but Sir Charles Wakefield is expected to be London's next Lord Mayor, and while it is to be hoped that he will not be called upon to slay with his own hands any leader of a mob, we may safely count upon a continuation of his vigorous business career as well as the prosperity of the public movements in which he plays a part. If his expert knowledge of lubrication is any indication, affairs at the Mansion House will run smoothly next year.—D. W. T.

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THE WEEK-END AT HENDON.

On Saturday morning Mr. Manton tested the climbing powers of the 100-h.p. monosoupape G.-W. scout biplane, and with a passenger on board reached a height of 6,000 feet in 9 minutes, without forcing the machine in the least. He expects no difficulty in beating this performance on the next occasion.

Mr. Wells was also out during the morning on the "Reo," and had the misfortune to taxi into a Service machine which happened to be on the ground. The "Reo" being of substantial build, the Service machine came off second best, but no one was hurt.

The wind became very gusty in the afternoon. The visitors included, as usual, many soldiers, wounded and otherwise, a lively batch of boy scouts, and Mr. G. Bernard Shaw, who drove a motor-car of strange appearance. He obligingly climbed into the five-seater and posed for a photographer. It was not a suitable day for passenger carrying, but many flights were made. Mr. Osipenko went up shortly after three o'clock to test the air, and had a very bumpy trip around the aerodrome on a G.-W. biplane. The next item of interest for the spectators was the departure of a Service machine for an unannounced destination.

A little later Mr. Birchenough left for Farnborough with a passenger on a Maurice Farman. He has done this journey so often that it is now said he reads magazines on the way.

Messrs. Manton and Osipenko gave several more demonstrations before night fell.

Sunday was rather like an October day, the wind being high and the sky heavy with clouds. Passengers were not invited, but a number of flights were again made by Messrs. Manton and Osipenko on G.-W. biplanes, and by Mr. Roche-Kelly on a 60 h.p. Beatty-Wright, the conditions being evidently uncomfortable. Mr. Baumann attempted to take a passenger up on a 60-h.p. Ruffy-Baumann, but came down again after a short "straight." Mr. Moore, for once, spent a quiet week-end on earth. He was in mid-air last Thursday with a passenger when his crank-case broke, but, fortunately, he made a good landing, and his machine is intact.—D. W. T.

THE RUFFY-BAUMANN BOOKLET.

An interesting little booklet comprising 16 pp. of letterpress and photographs has just been brought out by the enterprising Ruffy-Baumann School of Flying at Hendon. The booklet contains a full description of the schools' methods, photographs of the 60 h.p. and 50 h.p. Caudron type machines, a very readable article entitled, "Flying as an Art," by "Ornis," and also photographs of the school's pilots, including Messrs. Baumann, Ruffy, Virgilio and Winchester.

All intending pupils are recommended to write for a copy of this publication, which will be sent free on application to those mentioning THE AEROPLANE.

School and Weather Reports for July 11th, 1915.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fair	Fair	Very Windy	Fair	Fair	Windy	Very Windy
South Coast ...	Fine	Fine a.m. ; Gale W. p.m.	Gale W. p.m.	Windy Rainy	Fine	Fine a.m. Dull p.m.	Dull Fine

HENDON.

AT THE BEATTY SCHOOL OF FLYING, LTD.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Procter, P. A. Johnston, A. E. Mitchell.

Pupils with instructor on Beatty-Wright machines: Messrs. Boyle (31), Chalmers (15), Davison (22), Delves (14), Eaton (25), Fitzherbert (18), Holland (15), Jones (23), King (29), Morgan (31), Ross (21), Sampson (15), Tomlinson (60), Vickers (15), Zimmermann (27), Savile-Ornt (23) and Dickinson (30).

On Caudron machine: Messrs. Alcock (20), Banks (16), Chalmers (8), Coates (10), Collett (10), Crossman (10), Davison (10), Goodfellow (30), Nicholson (20), Overton (20), Rutherford (13), Spicer (10), Thompson (20), Tolhurst (20), Dickinson (20), Bell (20) and Stagg (10).

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WANTED, two experienced Riggers. Those used to balloon work preferred.—Apply, stating age, experience and wages required, to the nearest Labour Exchange, mentioning No. 658 and this paper. No person engaged upon Government work need apply.

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Two very excellent tickets were taken, one on Monday by Lieut. W. T. Holland and the other on Thursday by Mr. Chalmers.

Machines in use: Beatty-Wright dual-control and single-seater pusher biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday and Sunday. Extra practice was taken by Messrs. Chave and Turner.

AT THE HALL FLYING SCHOOL.

Pupils receiving instruction with Mr. Stevens: Lieut. Phillpotts (38 mins.), Booker (53), Furlong (25), Gay (64), Minot (20), Grant (40), Mason (16) and Lieut. Raymond-Barker all doing circuits or figures of eight.

With Instructors Cecil M. Hills, Herbert James and C. W. Snook, the following pupils received practice: Messrs. Russell (64), Bell (30), Millbourn (22), Hammer (28), Wilkins (16), Hatchman (30), Lieut. Jowett (48), Yonge (38), Gordon (54), Bayley (14), Snowdon (28), Bangs (12), Huggan (14), Watson (14) and Punnett (10).

Two certificates were taken, one by Mr. Laurence Minot and the other by Lieut. Grant, Mr. Minot making a splendid glide from 2,300 ft. with propeller stopped. Lieut. Grant, who has been on active service during the greater part of the war, obtained special leave to qualify as a pilot.

Mr. Snook, who took his certificate at the school the previous week, has been helping with school practice during the week and is now taking up duty with the R.F.C. Mr. Minot and Lieut. Grant have also been appointed to the R.F.C.

The following pupils are practically ready for their certificates: Lieut. Raymond-Barker, Lieut. Blythe, Messrs. Mason Gay and Furlong.

Machines in use: Hall tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Pupils with instructor on machine: Messrs. Fenning (10 mins.), Boisson (6), Hudson (8), Brand (18), Gardner (30), Mathewson (42) and Liddell (10).

Straights or rolling alone: Messrs. Sykes (16), England-Derwin (16) and Wilson (18).

Machines in use: R. B. 60-h.p. Gnome Caudron type, 50-h.p. Gnome and R. B. 50-h.p. Gnome tractor biplanes.

On exhibition days Mr. Baumann made numerous ascents with passengers and gave several interesting exhibition flights. The new 50-h.p. machine has now been tuned up and is now flying in a very creditable manner.

AT THE GRABAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Blake, Clayton, Clifford, Dallas, Douglas, Hodges, James, Minnie, Murray, Perham and Sieveking.

Circuits with instructor: Prob. Flt. Sub-Lieut. Pearson.

Certificates taken by Prob. Flt. Sub-Lieuts. Hardman and Watkins.

Machines in use: Grabame-White biplanes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. D. Smiles, W. T. Warren and J. H. James.

Pupils: Messrs. McOnie, Sykes and Sargood rolling; Messrs. Everidge, Gunner, Jacques, Scott and Moynihan straights.

Messrs. Dower, Pullinger, Wood and Adams circuits and eights.

On Tuesday evening, July 6th, Mr. E. H. Pullinger took his certificate, flying steadily and landing well; while in the morning of the same day, Mr. E. L. G. Dower passed for his brevet in remarkably fine style.

Machines in use: Three L. and P. tractor biplanes.

WINDERMERE.

AT THE N.A.C. SCHOOL.

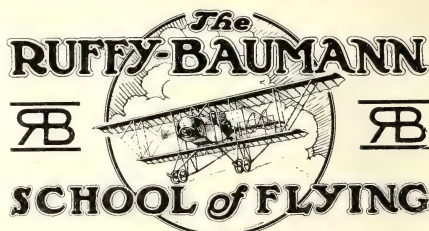
Instructors for the week: Messrs. W. R. Ding and J. Lankester Parker.

Pupils with instructor on machine: S. S. Benson (35 mins.), W. Laidler (15), U. K. Lawton (32), D. S. C. Macaskie (32), G. M. Port (33), H. Robinson (24), D. N. Robertson (28), J. F. Ridgeway (30), H. Slingsby (25), E. R. Yates (14) and A. J. Inglis (28).

Eights and circuits alone: S. J. Sibley.

Machine in use: The N.A.C. pusher biplane, which has been entirely rebuilt, altered and fitted with twin floats was in use, and the Perry-Beadle flying-boat has been out and her behaviour on the water was highly satisfactory.

Messrs. W. R. Ding and J. L. Parker were out several times making exhibition or test flights, and a number of passengers were carried during the week-end.



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Dear Sirs,

5th July, 1915.

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You may make whatever use you like of this letter.

Yours, with thanks,

(Signed) H. BALFOUR
(60th Rifles).

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WEDNESDAY, JULY 21, 1915

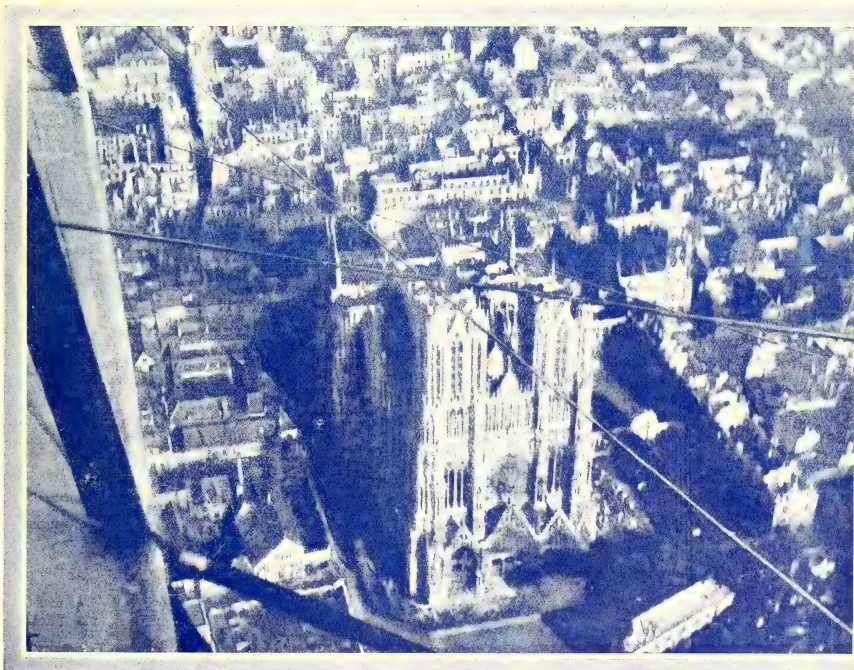
Edited by
C. Grey

Vol. IX. No. 3

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

THE PITY OF IT



A photograph from a German source, received via a Neutral Country, of Reims Cathedral and the surrounding houses, taken from above. Though the Cathedral itself does not show much damage it may be seen how the houses to the right and beyond it are without roofs. The photograph is alleged to have been taken from a German aeroplane, but if so it must have been within 1,000 feet of the ground. The piece of chassis visible suggests rather a Henri Farman

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ON SERVICE AVIATION.

Apparently one of the hardest things in the world to make people in this country understand is that if you are going to rebuild a house you must knock down part of the old one first. As soon as one begins to show what has to be cut away to make room for the necessary new structure one is accused of being a mere house-breaker and not an architect.

In a similar way, if one dares to criticise things in the Services that are obviously wrong, or are clogging progress, or subverting discipline, or bringing the King's uniform into disrepute, one is promptly accused of being a mere destructive critic, or a pro-German, or a civilian meddler, or something equally comic in the way of a nuisance to those who consider themselves the elect of the Lord because they happen to sit in an office-chair or in comfortable billets outside the range of ordinary guns, instead of having to lead a worried life in an officially approved if inefficient aeroplane.

On the other hand, if one starts a purely constructive criticism, advising in the light of the experience of practical men what should be done, what tactics should be adopted, what types of machines should be built, and so forth, what happens? A certain number of officers who possess common-sense agree that there is some reason in the arguments. The people right at the top, who ought to profit by the advice of those officers, are carefully and effectively "gassed" by verbally brilliant technical advisers whose knowledge of practical aviation is small and whose reputation is based on successful experiments carried out by someone else, or on the facility with which they juggle with figures, which really mean nothing, but afford them an opportunity of showing off with a slide-rule.

The people who apparently profit most by constructive criticism in this country are the Germans. Whenever this paper—moved by the moans of people who know what ought to be and suffer from what is—has indulged in a prophetic outburst it is always the Germans who fulfil the prophecies. It is only thanks to the natural clumsiness of the Teuton that the fulfilment of the prophecies just fails to have the effect it would have if carried out, with a trifle more brilliancy of perception, by less stolidly scientific minds.

Somewhere in 1910, when Mr. A. V. Roe produced his first successful tractor biplane, the late lamented "Aero" ventured to describe it as "the type of the future." It became the standard type in Germany to a much greater extent than it has done in this country.

When, later on, this paper began to agitate for an adequate supply of aeroplanes and succeeded in exposing the then Minister for War, Colonel Seely (T.F.), the Germans were quietly storing up machines in just the way we should have been doing in this country.

When this paper was trying to induce the War Office to encourage the production of engines in this country, and pointing out how it could be done without expense, and while the Royal Aircraft Factory was busy trying to make an engine of its own and "crabbing" every

other attempt to make a British engine, or even to have French engines made in this country, the Germans were giving wholesale orders for engines of proved worth and were encouraging novel engines with prizes and small orders.

MULTIPLE-ENGINE MACHINES.

Again, long before the war, General Henderson and Colonel Sykes publicly stated on several occasions that we needed fighting aeroplanes with more than one engine, and this paper discussed constructively how such machines could be made. Those responsible for making or ordering machines for the R.F.C. apparently never moved a hand towards securing such aeroplanes. The Navy, it is true, took a mild interest in the double-engined "America" Curtiss boat. Then, after war broke out, a purely imaginary picture was published in this paper of a twin-engined "pusher" biplane with a central fuselage and a gun in front.

A month or so ago Colonel Seely's worthy successor in the House of Commons, Mr. Tennant, informed the world that we have some multiple-engine aeroplanes a-building. Then the official "Eye-witness" told, in connection with the story of the gallant young officer who landed his passenger safely on a burning gun-carrier, how the Germans had already produced a huge biplane with two fuselages and an engine in each.

I have since heard that at a later date there appeared over the French lines several twin-engined German machines, this time with single fuselages, just as shown in Mr. Rossiter's picture, only tractors instead of pushers. The speed and climb of these machines is said to be quite out of the ordinary, and they are alleged to carry in the bows not merely a machine-gun, but a real gun which fires shell, or case-shot.

The story from the fringing-line is that they brought down three or four French machines in the day, and that the rest of the escadrille in that district, knowing they were outclassed, simply and very properly refused to go up and face them. The result was that the French O.C. on the spot sent off to the British part of the line to beg for some of our fast "tabloid" scouts as being the only things in the air good enough to catch and out-climb the Germans. What happened after that is not recorded. One can only hope that the tabloids were effective. The series of events shows how the Germans seem to follow out practical ideas while other people, who have had the ideas given to them long before, either cast them aside or simply talk about them.

GASSING THE PUBLIC.

If one dares to tell the truth and to point out that all is not as it should be, despite continual warnings to those in authority and suggestions as to how matters may be improved, one is now apparently to be denounced as a croaker, a prophet of evil.

An excellent example of the kind of thing which does harm by promoting a false feeling of content and

security is found in the "Observer" this week, wherein Mr. C. C. Turner's *locum tenens*, "C. W.," opens his article thus:—

"It has been a bad week for the ravens. If we had really listened to them we should have been prepared to hear that German airmen had driven the Royal Flying Corps from the skies and frightened the Royal Naval Air Service to its nesting-place. But whether we had listened to them or not, there has been ground for some agreeable surprise in the record of the past few days. All the croaking in the world does not alter facts. . . ."

Then he goes on in similar cock-a-hoop style to gloat about Sir John French's report and the statement that in two months the R.F.C. had sixty combats in the air in which not one British aeroplane was lost. He says: "It cannot all be British luck, or even British pluck; our fellows must, after all, have something to fly on and something to fight with."

Proceeding, this new champion of things as they are—as opposed to things as they should be—is vastly cheered by the "Koenigsberg" incident, and a little raid by 35 French aeroplanes, and the "promise of the new British multiple-engine aeroplane" (by Mr. Tennant, it is noted), and a lucky escape by the diminutive Italian P.4.

Finally, he says: "Indeed, the critics, those of them who have any breath left in their bodies, are driven to fall back on the old childish scare that the enemy has really got very wonderful, terrible instruments and vehicles which he is reserving till the last moment."

A PART OF THE TRUTH.

If "C. W." were at all closely in touch with Service matters he would not endeavour to "gas" the readers of so influential a paper as the "Observer" into an unwarranted state of confidence. I pay him the compliment of believing that he errs in all honesty and ignorance.

Firstly, let him and his readers remember that Sir John French's report only deals with the period up to May 25th, and that vast alterations have taken place in the ensuing two months.

If he does not believe it, let him go to the War Office and ask the Department of Military Aeronautics about the new Aviatik with the 6-cylinder Mercedes engine of 150 h.p. which was practically flying rings round one of our fastest scouts the other day. And let him ask what the R.A.F.'s wonderful reply, the S.E.4a., with an 80-h.p. Gnome, can put up against it. And let him ask what engine we have to put up against the 150-h.p. Mercedes, supposing we have a machine to put it in. Highly placed officials occasionally allow newspaper people to know the truth about these things.

As to the "Koenigsberg" crowd, does he know the inner history of the aerial reconnaissance which finally succeeded, after some very curious and educative incidents? Before he is too pleased about this trifling success he had better learn more about the time, trouble, and money it cost.

As to the P.4 and the French raid, his attitude is merely that of a hundred or a thousand journalists, who announce a "Great British Victory" every time our men in the trenches blow up a German sap or collar a German trench.

Remember the "Victory at Hill 60," and what followed, before cheering about events two months old. This country must know the truth if it is to put its whole heart and soul into the task of winning the war.

I do not love the "Daily Mail's" literary style or its general method of entertaining its readers, but the nation owes it a debt of gratitude for the home truths it has told of late. They have roused the country to a sense of its peril far more than all the thousands of

pounds that have been wasted on the War Office's foolish and undignified posters.

Lord Northcliffe is an Irishman by birth and education, if not by breeding, and he knows the truth of the old Irish bull that if you want to galvanise an Englishman into life you have first to scare him to death.

Tell the English people the truth about this war and they will get up and get things done. But among the things they will get done will be the sweeping out of inept officials—and that is why officialdom objects to the truth.

GERMAN INSPIRATION.

No one has ever accused the German of being original. All the great German schemes are merely other people's ideas put into practical shape. The German multiple-engine machines may be only developed from the Italian Caproni illustrated in this paper some months back, and not from General Henderson's advice.

The German use of machine-guns may not be due to studying Mr. H. G. Wells's "Anticipations," published in 1900, which describes warfare almost exactly as it is taking place to-day. The German use of bomb-dropping aeroplanes early in the war, when our people still looked on bomb-dropping as waste of time, may not be due to that wonderful story of the destruction of a bridge by aeroplanes in "The Green Curve," written soon after the South African War by "Ole Lukoi," otherwise Major (now Colonel) Swinton, R.E., otherwise the official "Eye-witness" of to-day. But the fact remains that all the startling things they have done in this war have been done on paper years or months before, and that our own people have paid no attention to them.

A REASON FOR CAUTION.

The chance that anything one suggests in writing may be adopted by the enemy before our people see fit to take any notice of it naturally makes one chary of putting forward any really good ideas, and it is, of course, quite useless submitting them in proper form to official inspection, because they are merely destined to be scrapped by people who have their own axes to grind. One can therefore only put forward such notions as occur from watching the enemy's line of action and drawing inferences therefrom.

At the present moment we know that the Germans want to raid England in force. We also know that Zeppelins have not been such a success as they hoped. We also know that the Germans, with the initial help of the Austrian, Herr Igo Etrich, and the research work of the Göttingen University, have long studied inherent stability, and have probably forgotten more about it than the National Physical Laboratory and the Royal Aircraft Factory have yet discovered, with the result that most German aeroplanes are inherently stable.

Not having an A. V. Roe to show how constructional strength may be derived from what looks like weakness, Germany has not produced a B.E.2c., and has built her aeroplanes on the strength of a bridge girder and not on the strength of a fishing-rod. Nevertheless, the modern German aeroplanes fly better than almost anything in the possession of the Allies.

Furthermore, we know that Germany is building very big aeroplanes, which fly fast, climb fast, carry big loads, and have more than one engine, so that if all the engines hold out till the objective has been reached, the machine, lightened of its load, may well keep in the air with one or two engines and so return home safely.

AN OBVIOUS GERMAN SCHEME.

What, then, could be more natural than that a fleet of such machines should be built for a series of raids on

England? The Germans, on Mr. Tennant's admission that we are only now building big aeroplanes, and knowing English habits, are naturally aware that it must take months and months before we can produce such machines in quantities.

In that time, what is to prevent such a fleet from raiding the East of England? Inherent stability allows the fleet to start at night or in early morning fog so as to arrive at daylight, for the pilots are assured of their machines always keeping right side up, even if they cannot see to orientate themselves. Multiple engines assure their not having to land in enemy country, except by extraordinary bad luck. With small shaded compass lights, and tail and wing-tip lights showing horizontally only, such a fleet could navigate to almost any point with reasonable accuracy in the dark, and keep station while doing so.

The whole thing is a perfectly simple and obvious proposition, such as must be evident to the logical German mind, for it does not demand an atom of original thought.

HOW WE MIGHT RETALIATE.

But is there any reason why we should not do it first? The B.E.2c. is probably as stable as most machines in Germany. There is nothing to prevent any or all of half a dozen real live aeroplane manufacturers from turning out machines with precisely similar aerodynamic qualities, merely building them with common-sense constructional details so that they can be made in less than half the time and at about half the cost, simply because there would be no waiting for freak parts or materials. They could be built bigger, to scale, and fitted with two engines, and there you have a machine ready to take on any job the Germans like to adventure, only the other way round.

Situated as we are in Flanders, nothing much can be done from there, unless we care to blow up Germano-Belgian munitions factories, like the Metallurgique Works at Antwerp or the Fabrique Nationale Works at Liège, and presumably that would be a trifle too drastic, seeing that most of the Belgians working there are more or less starved into doing it. Still, it might serve them right for not leaving when the Germans came.

A more tempting notion is a regular series of raids on the Rhine bridges from a point somewhere near Belfort or Toul. If the Rhine bridges could be kept permanently broken it would greatly complicate the problem of feeding the German troops.

Later on, when we win back some of Belgium, as we piously hope to do, say as far as Antwerp or Brussels, it will be time enough to think of raiding Essen. At present, although Essen can be reached, it would take such a load of fuel to get there and back that the amount of bombs carried would be scarcely worth while,

and there are plenty of other places worth strafing which would absorb the energies of a good many hundreds of pilots and machines, if we had them.

Of course, all this is purely visionary. We are much more likely to see that German air-fleet over here than ever we are to see even the practice flights of the multiple-engine, inherently-stable, long-distance raiders which I have envisaged, for, although such a fleet could be built in six months from now, there are far too many petty intrigues and jealousies going on to offer any great hope of getting the thing done.

THE DRAG ON THE WHEEL.

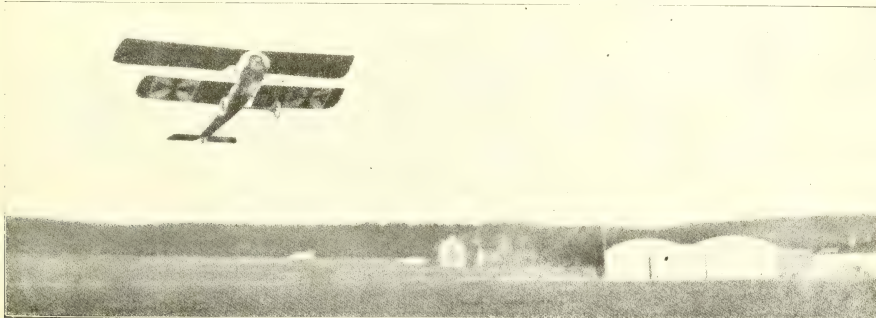
To those who are betraying their country by their jealousy of one another, by their wranglings about their pet theories, by their intrigues to supplant men above them or to prevent good men from showing up, by their sulkiness when asked to do something they dislike, by their desire to score off someone who is as clever as they are, I commend the following momentous words:—

"War can make things of more moment to us than victory. It can make men. Beside its deadly seriousness the petty satisfactions of peace sink to their proper size, and the vain rewards for which men wrangle become of no account before its dauntless sacrifice.

"We might win this war by the help of our Allies, and profit from it not at all. Yet we might, in the spiritual throes of defeat, regain some of that wisdom, hardihood, and self-reliance which made memorable the name of England three hundred years ago.

"The victory that most concerns us is the victory over ourselves. Let us leave the ultimate issue where it belongs; this is the issue that concerns us; and the most surely acceptable petition that we, aye, and the Germans, too, can make, is for the valour and understanding that will enable us to quit ourselves like men."

Those are not the words of an inspired prophet, though many saints and prophets have won canonisation for less cause. They are the words of a mere journalist, a scribbler like myself, though one who reaches heights to which I cannot hope to attain. They were written last week by one H. J. Prevost Battersby, a war correspondent now in Northern France for the "Morning Post." He is in the middle of things and sees where our weakness lies in the Army in France, as I see the troubles which afflict the Flying Services at home. The key to all is in the phrase, "the vain rewards for which men wrangle." Selfishness, self-glorification, self-exaltation, with its concomitant jealousy of what others do or what others may do if not suppressed or supplanted. Can it be that defeat, and not victory, is needed to make Britain a nation to which one may be proud to belong?—C. G. G.



One of the new German Halberstadt Scouts getting off. These are small biplanes of combined Morane-Brisol type.

Naval and Military Aeronautics.

From the "London Gazette," July 13th, 1915.

ADMIRALTY, JULY 10TH.

TERMINATION.—Temp. commn. of Sec. Lieut. G. Bennisson, R.M., terminated June 27th, he having been reappointed temp. sub-lieut. R.N.V.R., for duty in Royal Naval Air Service. June 28th.

* * *

WAR OFFICE, JULY 13TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—June 10th: Temp. Lieut. H. M. Sison, A.S.C.; Lieut. J. R. Anthony, 6th R. Welsh F.; Sec. Lieut. G. L. P. Henderson, S.R.; Sec. Lieut. A. M. Morison, S.R.

Asst. Eqpmt. Officer (without pay or allowances).—Temp. Sec. Lieut. G. M. B. Dobson. July 1st.

* * *

From the "London Gazette," July 14th, 1915.

WAR OFFICE, JULY 14TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Lieut. R. F. Morkill, W. Yorks (since killed on duty). June 21st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Apts. of sec. lieuts. (on prob.) G. S. Bower and W. E. Baylis in "Gazettes" of April 17th and June 21st cancelled. July 3rd.

* * *

From the "London Gazette," July 15th, 1915.

WAR OFFICE, JULY 15TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Adjnt.—Capt. C. Fraser, N. Staffs, and seconded. June 21st.

Flying Officers.—June 24th: Sec. Lieut. J. W. Woodhouse, S.R.; Sec. Lieut. P. D. Robinson, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: J. W. Woodhouse, P. D. Robinson.

* * *

From the "London Gazette," July 16th, 1915.

WAR OFFICE, JULY 16TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Asst. Eqpmt. Officers.—Capt. R. Hall, 3rd (Res.) Cheshire. May 10th. July 1st: Sec. Lieut. W. H. T. Rampling-Rose, S.R.; Sec. Lieut. R. G. Bennett, S.R.; Sec. Lieut. G. P. Grenfell, S.R.; Sec. Lieut. S. E. Neal, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of Sec. Lieut. (on prob.) W. V. Falkiner, which appeared in "Gazette" of June 23rd, cancelled July 3rd.

Sec. Lieuts. (on prob.) confirmed in rank: G. P. Grenfell, S. E. Neal, R. G. Bennett.

* * *

From the "London Gazette," July 17th, 1915.

WAR OFFICE, JULY 17TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Adjnt.—Capt. H. S. Walker, Cheshire, and seconded, vice Lt. Maj. E. B. Gordon, Northd. F. June 27th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of Sec. Lieut. (on prob.) G. Forbes in "Gazette" of June 12th, antedated to May 12th.

* * *

From the "London Gazette," July 19th, 1915.

WAR OFFICE, JULY 19TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Coms.: July 3rd: Lieut. H. Blackburn, S.R., and to be temp. capt. whilst so employed; Lieut. M. McB.

Bell-Irving, S.R., and to be temp. capt. whilst so employed; Capt. J. G. Hearson, R.E.

Flying Officer:—Sec. Lieut. R. G. Gould, S.R., June 29th.

NAVAL.

The following appointments were notified at the Admiralty on July 13th:—

ROYAL NAVAL AIR SERVICE.—Messrs. F. P. Reeves and D. G. Broad, entered as proby. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date July 18th and July 9th, respectively.

* * *

The following appointments were notified at the Admiralty on July 15th:—

ROYAL NAVAL AIR SERVICE.—Flight Com. H. C. Fuller, to the "Manica," to date July 13th.

The following granted temp. commissions as lieuts., R.N.V.R., to date as mentioned: J. K. Curwen, July 2nd; B. T. Hamilton, July 14th; and H. C. Greenwood, D.Sc., July 13th.

Surge. Probr., R.N.V.R., C. R. Mackenzie transferred to R.N.A.S. as flight sub-lieut., on probation, for temp. service, to date July 14th.

Messrs. F. U. Y. Weldon and H. Sherwood entered as proby. flight sub-lieuts., for temp. service, to date July 17th and July 14th, respectively.

* * *

The following appointments were notified at the Admiralty on July 16th:—

ROYAL NAVAL AIR SERVICE.—Flight Com. (late Lieut., R.N.) C. Hornby placed on the emergency list of the Royal Navy as lieutenant-com., with seniority December 31st, 1909, and appointed to the "President," additional, for Hendon Naval Air Station, in command, to date July 12th.

Mr. L. P. Paine entered as proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date July 18th.

Mr. W. P. Nicholls granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S. (armoured cars), to date July 15th.

Messrs. C. J. Walters and A. C. Wright entered as warrant officers, second grade, for temp. service, and appointed to the "President," additional, for R.N.A.S., to date July 15th.

* * *

The following appointments were notified at the Admiralty on July 17th:—

ROYAL NAVAL AIR SERVICE.—Temporary Sub-Lieutenants (R.N.V.R.).—W. G. Chambers, R. B. Hay, and T. S. Sharratt, all promoted to temporary lieutenants, with seniority of July 15th.

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows:—P. Laing and C. R. Carr, July 9th; and S. J. Goble, July 13th; all appointed to the "President," additional, for R.N.A.S.

Temporary commissions have been granted as follows:—H. E. Hickmott, E. E. Adams, and D. C. M. Hume, as Lieutenants (R.N.V.R.); E. F. Turner, B. Thomson, C. A. Crow, and T. M. Wilson, as Sub-Lieutenants (R.N.V.R.); all with seniority of July 16th, and all appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on July 18th:—

ROYAL NAVAL AIR SERVICE.—A. T. Lee and H. M. Lyons granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date July 17th.

Able Seaman F. Towers, R.N.V.R., granted temp. commission as sub-lieut. for R.N.A.S., to date July 17th.

Actg. Flight Lieut. L. D. McHearn is confirmed in rank, with original seniority.

Probationary Flight Sub-Lieuts.—L. H. F. Irving, A. F. F. Jacob, T. F. N. Gerrard, F. Fowler, E. A. de L. de Ville, Cyril C. Carlisle, W. A. K. Dalzell, A. H. Sandwell, J. C. Croft, L. A. Hervey, J. H. Rose, J. E. B. Maclean, H. F. Towler, C. F. Latimer, J. E. D. Boyd, R. F. S. Leslie, R. Y. Bush, C. B. C. Williams, C. L. Scott, C. E. Brislley, and F. J. Bailey, all confirmed in rank with original seniority.

* * *

The Secretary of the Admiralty announced on July 15th the following casualty, under date July 12th:—

DIED OF WOUNDS.

Lieut. Stanley C. Knight, R.M.A., Anti-aircraft Brigade.

* * *

The following appeared in the Obituary Columns on July 17th:—

KNIGHT.—Died of wounds, July 12th, 1915, received in action July 10th, while directing his section under heavy shell-fire, Lieut. Stanley Knight, aged twenty-two years, R.M.A., Anti-Aircraft Brigade, dearly-loved second son of Charles Stafford Knight, Wingfield, Banstead, formerly of Nazeing, Essex.

Lieutenant Stanley Knight, R.M.A., was in the ranks of the Royal Marines for a year and a half, and was given his commission on October 30th of last year. His promotion to the rank of temporary lieutenant was dated March 27th last.

* * *

It is reported that on July 13th a naval aviator and his mechanic, who left the Isle of Wight in the early morning, were compelled to descend when about four miles off Bognor owing to engine trouble. Joe Ragless, a fisherman, saw the seaplane come down and, accompanied by another boatman, put off in a sailing-boat and rescued the crew, who are said to have been in an exhausted condition. The boat was swamped several times on the way in. The mechanic was suffering from a severe wound in the leg, indicating that the descent must have been rapid.

* * *

An engagement is announced between Basil Edward Pease Gregg, Flight Sub-Lieutenant, Royal Naval Air Service, only son of the late Rev. E. P. Gregg, M.A., and Mrs. Gregg, of Upton Rectory, Torquay, and Winifred Standish, second daughter of Captain Anthony S. Thomson, C.B., Elder Brother of Trinity House.

* * *

The following advertisement is not without interest:—WILL someone sell motor-cycle cheap to air-mechanic at isolated R.N.A.S. station? Any condition.—Box Z.700, the "Times."

One hopes the man will get his machine cheap, but the "any condition" phrase seems to indicate that, while money is an object to him, he has unlimited command of time and Government tools and material, in which case it seems that some O.C. some air station does not find enough work for his men to do.

* * *

There is a particularly joyous story in circulation, relating to the excitement caused by a broken "aerial" from a Naval aeroplane. The wire broke some 300 feet from the end, and, dropping from some thousands of feet, the plumb-bob fell on soft ground and buried itself two or three feet deep, while the wire distributed itself in a neat line over the landscape. Presently a plantigrade patrol tripped over the wire and was moved to investigation. One end was found to be loose. The other end disappeared mysteriously into the ground.

"Aha!" said he, "a plot!" and went off to report to his platoon commander, who told the major, who told the colonel, who collected the adjutant, who roused the rest of the company officers, who turned out the bat-

talion, which went off to the suspected spot. The pioneer officer diagnosed a land mine laid by German spies, though how a naked wire could give an electric contact he did not explain. The battalion formed a large circle round the suspected area, keeping the populace at a safe distance. Officers, protecting their faces with their open hands, peeped through their fingers towards the place where the gallant pioneers with averted faces cautiously drove a shallow sap towards the disappearing wire. And then, after sundry tense minutes, the plumb-bob was disclosed.

MILITARY.

The following casualties in the Expeditionary Force were reported on July 13th under date July 7th:—

WOUNDED.

Burdett, Capt. A. B., York and Lancaster Regiment, attached Royal Flying Corps.

Payze, Sec. Lieut. A., Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on July 14th under date July 8th:—

WOUNDED.

Acland, Sec. Lieut. W. H. D., Royal 1st Devon Yeomanry, att'd. Royal Flying Corps.

de Halpert, Sec. Lieut. R. V., interpreter, att'd. Royal Flying Corps.

[It is understood that Mr. Acland was the pilot whose gallantry in bringing down safely a gun-carrying biplane while the machine was on fire was mentioned by the Official Eye-Witness recently. It is presumed, therefore, that Mr. de Halpert was the brave passenger who sat still and endured mental and physical agony with stoic calm to avoid interference with the pilot's actions.—Ed.]

* * *

The following casualties in the Expeditionary Force were reported on July 15th under date July 9th:—

KILLED.

Playfair, Lieut. L., 1st Royal Scots, attached Royal Flying Corps.

WOUNDED.

Peck, Sec. Lieut. R. H., 5th Dorsetshire Regiment, attached Royal Flying Corps.

* * *

The following appeared in the obituary columns on July 14th:—

PLAYFAIR.—Killed, 6th July, during an engagement in the air, Lieut. Lambert Playfair, aged twenty-one, 1st Royal Scots, attached Royal Flying Corps, only son of Mr. and Mrs. H. Playfair, Siloni Bari, Assam, and grandson of the late Lt.-Colonel Sir R. Lambert Playfair, K.C.M.G.

Lambert Playfair was born at Dibrugarh, India, on December 7th, 1893. He took his certificate, No. 619, on an E.A.C. biplane at Eastbourne, on September 11th, 1913, and was appointed to the 1st Battalion The Royal Scots (Lothian Regiment) in February of 1913, and was seconded to the R.F.C. on probation in May last.

He joined the R.F.C. shortly after his arrival from India with his battalion in the early part of this year, and soon became a good flier. He was endowed with power of observation of a high order. Writing to his relatives the officer commanding his wing says:—"His usual work was far above the average, and his end was heroic. Rather than give way to the German he ordered an attack when he had only five rounds of ammunition left. It is an honour to have had such an officer under one's command."

* * *

The following casualty in the Expeditionary Force was reported on July 16th under date July 10th:—

KILLED.

Monckton, Sec. Lieut. M. H., Royal Garrison Artillery, attached Royal Flying Corps.

Marmaduke Henry Monckton was born at Clifton on May 31st, 1891. He was appointed to the Garrison Gunners on December 23rd, 1910, and transferred to Field Guns on December 20th, 1913, losing considerable seniority thereby. He took his certificate, No. 730, on a Vickers biplane, at Brooklands, on January 28, 1914, and thereafter paid a premium to learn the construction of aeroplanes, working in the shops of another famous aeroplane firm as a mechanic.

He was a notably keen young officer, and took everything concerned with aviation very seriously, with the result that in a short time he acquired a remarkably comprehensive knowledge of his subject. His loss is therefore the greater in that the R.F.C. has lost more than a mere pilot.

He was appointed to the R.F.C. on March 19th, 1915.

* * *

The following casualty in the Expeditionary Force was reported on July 18th under date July 11th:—

WOUNDED.

Austin-Sparks, Capt. R. H., Royal Field Artillery, att'd. Royal Flying Corps.

* * *

John Claude Horsey Barfield, whose death has already been recorded, was born in London on June 5th, 1886. He was a solicitor by profession, and took to flying after war broke out. He joined the L. & P. School at Hendon, and took his certificate, No. 989, on December 12th, 1914. He was appointed to the R.F.C. on December 28th, 1914, and became a flying officer on April 12th, 1915.

* * *

Ronald Falshaw Morkill, who was killed at Shoreham, was born on November 22nd, 1891, in Edinburgh. He took his certificate, No. 535, on an E.A.C. biplane, at Eastbourne, on July 1st, 1913. He was gazetted to the Prince of Wales's Own West Yorkshire Regiment on December 18th, 1914, and attached to the East Yorks. He is also shown in the Army List as being an officer of the Canadian Engineers of the Oversea Contingents, his appointment being dated September 22nd, 1914, so that he presumably came back from Canada and transferred to the British Army, and was seconded to the R.F.C., his appointment as flying officer appearing after his death.

* * *

An inquest was held at Shoreham Military Hospital on July 14th touching the death of Mr. Henry Deakin Liley, aged twenty-six (reported in error last week as Riley), a civilian employed at the Royal Aircraft Factory, Farnborough, who was killed while flying as a passenger at Shoreham Aerodrome on Monday evening. Lieutenant F. W. Goodden, the pilot, was not well enough to give evidence, but the Coroner read a signed statement by him. In this Mr. Goodden stated that the wind was about 35 miles an hour and gusty. The engine was all right when he started, and he climbed steadily to about 150 feet. Then the motor stopped, and at the moment a gust lifted his right wing. Finding it impossible to right this, he made a left turn, which entailed flying down wind. For a few moments the machine felt normal, but another gust struck it, rendering it uncontrollable and causing it to nose dive.

Other witnesses stated that the machine caught fire, and they described the efforts to extinguish the flames and rescue Liley. He was badly burnt, but medical evidence showed that death was due to a fractured skull, and must have been instantaneous. The jury returned a verdict of accidental death.

* * *

A North London paper—the "Wood Green Sentinel"—published recently a letter written home by the late Lieut. Barfield, R.F.C., which is of considerable interest, and as the writer is dead no accusation can be made against

anyone of endeavouring to advertise him. The letter reads as follows:—

"I fought my first duel in the air on Sunday last. It happened like this—I was sent off on a patrol, and having reached the spot, was cruising about, well over the German lines, about 5,000 ft. up, being badly shelled by the anti-aircraft guns. Suddenly my gunner (a mechanic) began to get very excited and pointed below and behind. I banked the machine over, and there, about 2,000 ft. below, was a German monoplane painted brown with a huge black 'iron cross' on each wing. I dived down at him to attack from the rear. He saw us too late and tried to dive, but we were too fast for him, and when I got within 50 yards my gunner let fly. The poor devil fell forward and the machine nose dived into a wood below.

"The mechanic was very bucked about it; personally, I felt a bit sorry for the pilot, but he would, of course, have done us in if he had had a chance—and, after all, this is war.

"It is very weird when one is patrolling over the German lines, one is 6,000 ft. or so up, being shelled all the time by anti-aircraft guns and keeping a sharp look-out for Huns. One feels very isolated and lonely. Presently you see a machine coming towards you in the distance; you are uncertain whether it is friend or foe and fly towards it, your gunner keeping his gun trained upon it all the time as you approach one another; you recognise it as a friend and the pilot gives you a cheery wave as he passes on into the German lines, probably on a reconnaissance. This seems to buck one up wonderfully, as, before, all the world seems to be against you.

"All the while one is over the German lines one is under the fire of the anti-aircraft guns. If you fly straight they get you in time, so one flies zigzag, like a snipe, and prays hard. You can hear the shells bursting all round and it's bad for the nerves at first; one never returns from these trips without three or four holes in the planes."

As a plain, straightforward, yet graphic narrative the letter is an example to those writers who strive after effect.

Mr. Barfield was killed in a sideslip, in much the same way as so many other officers have been killed while on active service. In fact, the deaths due to simple and generally avoidable accidents are many times as numerous as those due to hostile fire.

After Mr. Barfield's death his C.O., in the letter in which he conveyed the news to the young officer's parents, wrote:—

"It may lessen your great sorrow to know that your son did not suffer at all, and also that before his end he had the opportunity of doing good work and took it."

* * *

The "Court Circular" of July 14th contains the following:—

Windsor Castle, Wednesday.

Lieutenant-Colonel C. J. Burke, Royal Flying Corps, had the honour of being received by his Majesty (at Buckingham Palace), when the King invested him with the Insignia of a Companion of the Distinguished Service Order.

* * *

The following appeared in the wedding columns of July 19th:—

CORBALLIS—ADAM.—On July 15th, at St. John's, South Parade, Bath, Capt. E. R. L. Corballis, Royal Flying Corps, second son of the late Colonel Corballis, Royal Dublin Fusiliers, and Mrs. Corballis, of 6, Hyde Park, W., to Enid Dorothy, younger daughter of Mr. and Mrs. Mercer Adam, of 26, Royal Crescent, Bath.

A story which is going about concerning an imaginary new "contractor" for military aeroplanes may entertain the R.F.C. abroad, though it is probably the invention of one of the earlier aeroplane builders. The yarn is that the firm's "chief engineer," a gentleman of vast experience in domestic woodwork, went down to be initiated into the mysteries of aeroplane construction. After inspecting drawings and puzzling out mixed metric and British dimensions thereon, he delivered himself thus:—"Yes! I believe I can say with certainty that, so far as the woodwork is concerned, we can handle this line. But—er—would you mind informing me whereabouts you procure the ironmongery?"

Rumour has it that the entire staff and the work-people at the Royal Aircraft Factory are to be enrolled as a Territorial battalion of the Hampshire Regiment. Presumably the coat-wearing section of the employees would be given temporary commissions, and would be included among the already large number of those referred to in the classic words of the brigadier, quoted recently, as temporary gentlemen. The balance would, no doubt, compose the rank and file, but there is absolutely no truth in the assertion that it is intended to adopt the German style of classification into First Line, or Active Army, and Landscum, or stay-at-homes. Nor is it true that the motto of the proposed battalion is to be "We don't want to lose you."

FRANCE.

The communiqué of July 14th says:—

Our aviation service, continuing its bomb raids, yesterday succeeded in effecting great destruction at the station of Libercourt, a military junction between Douai and Lille. A squadron of 20 aeroplanes dropped on the buildings and the lines twenty-four 90 millimetre and sixteen 150 millimetre shells. The gun-aeroplanes which accompanied the squadron bombarded a train which had stopped between two stations, and obliged an Albatros to land.

[The allusion to "gun-aeroplanes" may refer to the new twin-engine Caudrons which have lately been so highly successful in their tests.—Ed.]

The communiqué of July 16th says:—

A squadron of ten aeroplanes dropped this morning 46 shells of 75 mm. and six heavy bombs on the railway station of Chauny, where important depots of material are concentrated. The outbreaks of two fires were noticed. A barge blew up on the canal of the Oise.

The communiqué of July 19th says:—

One of our aeroplanes pursued an Aviatik and

brought it down with machine-gun fire. The machine, which was in flames, fell in the German lines near Soissons. Our artillery completed its destruction.

The following official French communication was issued for publication on July 19th:—

A correction of the German communiqués of the 14th, 15th, and 16th of July:—

1. Aviation.—One of our aeroplanes came to earth near Souchez in our lines; the aviators were slightly wounded.

The communiqué of July 20th says.

A squadron of six aeroplanes on the morning of the 20th bombarded the station at Colmar (Alsace).

Eight shells of 150 and three of 90 were launched upon the buildings, the rails, and the trains; the main station and the goods station must have been damaged.

No shell was dropped on the town.

The French machines returned undamaged.

Four aeroplanes on the 19th dropped 18 shells on the junction station of Challerange to the south of Voursiers.

It is reported that on July 10th a German aeroplane flew over Hazebrouck and dropped three bombs, but no serious damage was caused. Many bombs were dropped, but the extent of the damage caused is not yet known, owing to the secrecy which is being maintained on the subject. The aviators got away in safety.

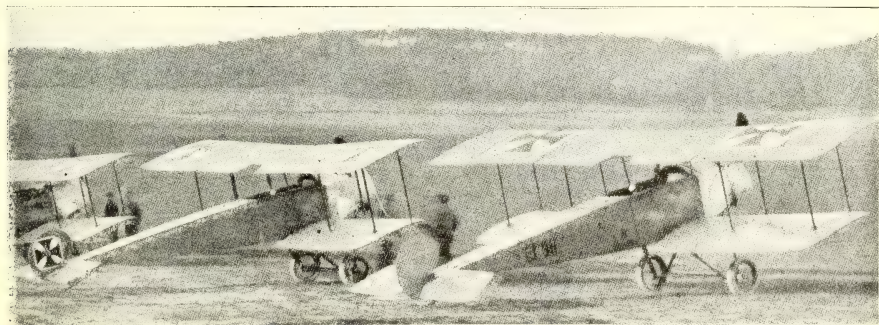
It is reported that twice during the past week German aeroplanes attempted to reach Dunkirk. On July 13th five enemy aircraft attempted for about half an hour to fly above the town, but they were eventually driven seawards by the fire of the French batteries.

Another squadron, heading for Dunkirk, was reported at 7 o'clock next morning, but only one machine succeeded in getting near the outskirts of the town, and the anti-aircraft guns of the entrenched camp quickly compelled that one to retire.

Bombs are said to have been dropped on the dunes without occasioning any damage, but it is not recorded whether any of the Allied aeroplanes pursued the enemy.

The following letter which appeared in the "Morning Post" is of interest:—

A correspondent in the French Aviation Service says:—"During a month I have done 22 hours' flying over the enemy, which is considered a good average. The German anti-aircraft guns are very numerous and they shoot very accurately. They waste a lot of ammunition against us, as every time we go out they fire sometimes between



A Group of the little Halberstadt biplanes made at what used to be the Bristol works. As may be noted, the fuselage is very like the Morane and the cowl resembles the Bristol. The engine is the Oberursel, of Gnome type.

300 and 400 shells on each of us! And, mind, they as a rule place all their shots within 100 or 150 yards of our machines.

"Lately the Germans have had better machines and men, and yesterday a man from one of the escadrilles here came back with his observer badly wounded in a fight with a German machine armed with machine guns.

[Compare this with the information in the leading article this week concerning the advent of new and big German aeroplanes.—Ed.]

"So now we are going to have some sport and some real aerial fights. All our aeroplanes are armed with machine-guns, and we have a strong hope of bringing down the Boches!

"During my last flight which I made in conjunction with one of our batteries of 75's and one of 95, I had my machine struck fifteen times by the enemy shells. I had two 'ribs' broken and my propeller cut. I remained two hours above the Boche battery, to which I directed our fire, exposed to the attack of the special and most dangerous anti-aircraft batteries.

"I only returned when our guns had made their fire effective, and before descending I had the satisfaction of seeing the German battery annihilated by our 75's. My machine was *immobilisé* for two days to repair the damage done during this expedition."

GERMANY.

The communiqué of July 15th says:—

A French aeroplane was hit while flying over our lines, and came down within the enemy's lines on fire. Another machine was shot down near Heneinliard. The pilot and the observer, who were both wounded, were captured.

* * *

The communiqué of July 16th says:—

Our airmen dropped bombs on enemy troops at Gerardmer.

ITALY.

The communiqué of July 13th says:—

The general situation along the whole front is unchanged. Yesterday at daybreak a squadron of our aeroplanes effectively bombarded from a height of about 600 metres a large enemy camp in the neighbourhood of Gorizia.

* * *

The communiqué of July 17th says:—

During the night of the 16th two of our dirigibles bombarded the enemy's works around Gorizia and the enemy's camps on the northern slopes of Mount San Michele, in Carso, with satisfactory results. The dirigibles, which were continually lit up by the enemy's flares and made the object of heavy artillery fire, returned safely to our lines at daybreak.

* * *

An official note issued in Rome on July 18th says:—

One of the Austrian aeroplanes which yesterday dropped bombs on Bari was hit during its return by our rifle fire and dropped into the sea near Barletta. The machine was reached by a fishing boat manned by two infantry soldiers and two official guards, who captured the two Austrian officers.

* * *

The following communiqué was issued by the Admiralty in Rome on July 19th:—

Since the last communiqué on July 7th intense and sometimes very close action has developed with ships and aircraft against the enemy's coast on the lower and upper Adriatic.

Among the most remarkable feats carried out by our aircraft should be mentioned the bombardment on July 7th by one of our dirigibles of the Stabilimento Tecnico at Trieste, which had already been seriously damaged in the preceding attack on July 4th. On that occasion the bombs dropped on these important works

caused an outbreak of fire, which was visible at a distance of 40 kilometres (25 miles).

Bombs were dropped by our hydro-aeroplanes on Austrian destroyers concentrated in the Fasana Canal, near Pola, on July 14th. A bombardment was effected by two of our hydro-aeroplanes against the batteries near the Salvore Lighthouse on July 14th.

A heavy bombardment, which had excellent results, was carried out by one of our dirigibles against the railway station at Grignano and the neighbouring works of the Trieste-Monfalcone railway on July 16th.

On July 17th an enemy hydro-aeroplane, forming part of a squadron which had flown over Bari and Barletta, was captured with the two officers who manned it.—THAON DI REVEL, Vice-Admiral.

* * *

The Milan correspondent of the "Petit Parisien" states that the Austrian aeroplanes have shown fresh activity recently.

Venice was bombarded on July 11th for the fourth time. At 8 a.m. an aeroplane threw the first bomb from 6,000 ft., which demolished a small house. Another bomb fell on a working man's dwelling, and two women and a child were injured. Two bombs fell in the Lagoon near the Palace of the Doges.

The population rushed into the streets, where they watched the fight between the sentries firing from the house tops and the aeroplane.

The aviator escaped being hit, and before disappearing he dropped a shower of arrows, one of which, as it would have to do if the News Agency story was to be complete, pinned a woman's foot to the pavement in the street. One merely wonders mildly what species of pavement is used which could be penetrated by a steel arrow.

* * *

The "Morning Post's" correspondent at Rome reported on July 18th that in bombarding Bari from aeroplanes and killing six persons in that undefended town the Austrians have acted in opposition to the Pope's wishes.

He says:—"On July 12th Cardinal Gasparri wrote, at the Pope's request, to the Bishop of Rimini an important letter protesting against the bombardment of Adriatic coast towns. In this document, which is published today, and has been elicited by appeals from the bishops of Adriatic dioceses for protection against these attacks, Cardinal Gasparri says that when Italy went to war the Pope was specially anxious to save that part of his beloved country which is most closely bound to the successors of Saint Peter, and which possesses such famous religious monuments, from the horrors of war.

"This alludes to the historical fact that a large strip of the Adriatic coast formed part of the Papal States till 1860. Consequently the Pope made representations to the Austrian Emperor and Government, expressing a keen desire that they should conduct the war according to the dictates of international law and humanity, respecting open undefended cities, artistic and religious monuments, and especially the sanctuary of Loreto.

"Cardinal Gasparri admits that the Pope's object has not yet been fully accomplished."

* * *

300 mechanics from the ranks have obtained the Diploma of Aeroplane Motor-mechanic since April last in a strongly staffed motor school at Turin under Military supervision.

A new dirigible—some say an M4—should shortly fill up the place void by the loss of the "Citta di Ferrara."—T. S. HARVEY.

DENMARK.

Things have been rather busy lately. Lieut. Waage-Jensen on a Maurice Farman biplane with a Flight Lieutenant as passenger recently carried out a long-distance flight, covering 600 km. in 8 hours, the course being Copenhagen-Viborg (landing 230 km. in 2 hours 20 min.)—Aarhus (landing)—Odense-Nyborg (landing)—Copenhagen.

Flight Lieutenant Laub, of the Navy, at the request of the King Christian X, when inspecting the fleet in Big Belt, flew round Sealand to the Belt on a Danish flying-boat, 80-h.p. Gnome, with a passenger, in the morning, to partake in the manoeuvres, returning by the same route, covering 750 km. in all.

The Army had but a short pleasure of Björklund's Blériot monoplane (presumably an old Radley and Moorhouse one), the monoplane overturning in an early test flight by Lieut. Waage-Jensen. The Army will now quite abandon monoplanes and stick to biplanes. The 50-h.p. Gnome of the R. and M's. Blériot shall be used in a light scouting biplane. The Army have further ordered two 110-h.p. Gyro engines in America. The Navy have charge of a 100-h.p. Curtiss engine for a flying-boat being built at the Royal Dockyards in Copenhagen.—Hr.

NORWAY.

"Norwegian Shots' Association" has presented the Army with a sum of 25,000 kroner (£1,400) for an aeroplane, to be home-built.—Hr.

BELGIUM.

The "Telegraaf" (Amsterdam, July 15th) learns from Bruges that on July 5th British aviators bombarded a munition depot near Rollegem Capelle, between Roulers and Courtrai, and destroyed it.

On July 12th four British aeroplanes appeared over the German officers' club at Menin and dropped bombs. The casino was damaged and several officers were killed and wounded. The aeroplanes reached home safely.

Early on the 14th bombs were dropped on the wall of Zeebrugge.

* * *

The correspondent of the "Morning Post" at Amsterdam reported on July 13th that ten Allied aviators had again attacked the harbour works at Ghent, dropping a large number of bombs. Considerable damage was done, but details were lacking.

SWEDEN.

It is reported from Copenhagen that on July 18th Lieuts. Malmquist and Count Hamilton were killed in an aeroplane accident at Karlskroner. The primary cause of the accident was motor stoppage.

SERVIA.

The "Neues Wiener Journal" reports that a squadron of Servian aviators on July 15th again bombarded the fortress of Peterwardein. One of the aviators was shot down. The result of the raid is not mentioned; possibly, therefore, it was serious.

One has doubts about the aviators being Servians.

TURKEY.

It is reported that on July 11th an Allied cruiser, aided by torpedo-boats and aeroplanes, efficaciously bombarded the Turkish right wing near Ariburnu.

U. S. A.

The contract for the first U.S. naval airship has been awarded to Captain T. S. Baldwin in co-operation with the Connecticut Aircraft Company. The airship will be 175 feet long and of the semi-rigid variety. The power plant of 120 h.p. will drive twin propellers. The capacity of the airship will be 110,000 cubic feet.

* * *

Considerable discontent seems to exist in aviation circles in America concerning the backwardness of military aviation in the States, and history repeats itself on the other side of the Atlantic with demands now being made strangely similar to those voiced in this country two or three years ago. The Aero Club of America Bulletin No. 20 says:—

At this time, when the European war brings daily demonstrations of the potentiality of the aircraft, we realise the necessity of providing our army, navy, and militia with aeroplanes. The United States, the birthplace of flight, the country that gave to the world its first aeroplanes, the first hydro-aeroplane and the first flying-boat, is last in aeronautics—behind all the first and second class Powers and their colonies—very much behind Japan, China, Switzerland, Australia and Morocco.

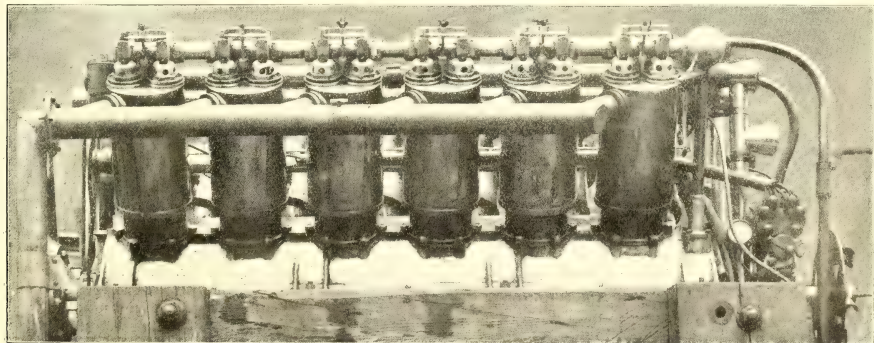
Our navy, which boasted three years ago of being the first navy in the world to have an aviation section, has, at this time, three years later, but five aeroplanes in commission and five more ordered. The half-dozen aviators in the navy who hold aviators' certificates have had no opportunity to gain experience in reconnoitring, have never manoeuvred with a fleet, and do not know what ships and submarines look like from the air.

The United States army has a few more aeroplanes than the navy—about half a dozen. But it also has very limited resources. The very aerodrome used as an aviation centre, at San Diego, is private property, and the aviation corps of the army deeply appreciate the courtesy of Mr. Spreckels in donating his property for their use, but it would be unreasonable and unfair to Mr. Spreckels to expect to impose upon him always.

The army aviators have never had practice in operating with troops; our artillery has no aerial observers; has never practised firing with aviators as "spotters"; the bulk of officers and the rank and file have never had an opportunity of familiarising themselves with the aeroplane. Neither the Atlantic nor Pacific coast defence has aeroplanes; their big guns have no aerial eyes. The Philippine Islands, the Hawaiian Islands, and the Panama Canal have no aerial protection.

* * *

The Aero Club of America announces that the use of a Wright biplane for the National Guard of the States of New York, New Jersey, and Ohio, each to use it in turn,



Side View of the 12-Cylinder Green Engine to which reference is made elsewhere.

has been offered by Mr. Ferdinand Eggena, the sportsman. This is the eleventh machine to be offered for this purpose.

It will be largely a matter of luck if Ohio gets a turn with the machine.

To enable the Third Battalion of the Naval Militia of New York State to start the organisation of an aviation division, the Curtiss Aeroplane Company, who had already offered a flying-boat and a course of instruction for a pilot and mechanic of the Naval Militia, have offered to train an additional officer from the Third Battalion, which is located at Buffalo, the home of the Curtiss Co. Lieutenant Frank Maythem, Junior Grade, has been appointed to take the course of training and is now attending the Curtiss School at Buffalo.

* * *

July 13th was celebrated as Aerial Navigation Day at the Panama-Pacific Exposition. The fête included a parade of "aeroplanes and aviators, as well as armoured automobiles, soldiers and sailors."

CANADA.

Somewhat belated newspaper cuttings describe the visit of H.R.H. the Duke of Connaught to the Curtiss Company's flying school at Toronto. Mr. McCurdy conducted the Royal party round the school and explained the working of the machines. Mr. Samuel Pierce (who was for all too short a time a popular personality at Brooklands) gave demonstrations on a flying boat, and finally Lieut.-Col. Staunton, military secretary to the Duke, went up with Mr. Victor Vernon.

Owing to a sudden stoppage of the motor the machine came down upon the water hurriedly and sustained a broken plane. Fortunately neither of the crew was hurt.

More recently Mr. Pierce has been busy training pupils who wish to take part in Service aviation. Among the pupils are Capt. E. H. MacLachin, Lieut. A. Day, and Lieut. D. G. Joy.

* * *

The Canadian papers state that a large Curtiss seaplane is being built at Toronto for the Russian Government. The machine is said to be 58 feet span and to have a 160-h.p. motor.

AUSTRALIA.

The Minister of Defence of the Australian Commonwealth has announced that numerous applications were being received for appointments to the Flying Corps and to the Flying School. The Department, however, desired it to be known that at present no vacancies exist in either of these units.

* * *

The Sydney "Daily Telegraph" of May 26th, 1915, published the following information:—

"Mr. Lebbeus Hordern will leave Sydney next Tuesday for Adelaide to catch the outgoing mail steamer for England, where he will place his services as an aeroplanist at the disposal of the nation. Mr. Hordern intends immediately he arrives in England to join the Royal Aerial Corps, and he will be prepared to take up work with either the naval or military flying forces. He intends to purchase a Vickers machine as soon as he gets to the Old-country, and the type of plane which he purposes buying will cost him £2,500 of his own private money. It will have a machine gun mounted, and will be powerful and fast. [One would remind Mr. Hordern of the place reputed to be paved with good intentions. It has not apparently occurred to him that the "Royal Aerial Corps" may not want him and that the Vickers output may be sold elsewhere.—Ed.]

"Mr. Hordern, who is a director of Anthony Horderns, Limited, and a brother of Messrs. Sam and Anthony Hordern, was a pupil of the French flier (M. Guillaux), and has made many flights over Sydney in the seaplane which he imported some time ago, and which he has since donated to the Commonwealth Aviation School. Mr. Hor-

dern will take whatever rank is offered him." [Jolly good of him not to stick out for being made D.A.D. What?—Ed.]

* * *

"Captain" Penfold writes to say that matters aerial are rather quiet in the Commonwealth. Mr. Scotland, the Caudron pilot, has now left for New Zealand. Mr. Mardriel has almost rebuilt an 80-h.p. Caudron at Kensington, near Sydney, where Mr. Badgery's 45-h.p. Caudron is stationed. "Captain" Penfold is at present engaged on alterations in a small airship.

* * *

It is reported in the Australian Press that work is now in progress on the construction of both aeroplanes and engines in the Commonwealth. The first machine has been built and it waits the completion of an Australian-built Renault type 70-h.p. motor.

It is said that firms have been discovered who are prepared to build six engines between them. Considerable difficulty has been experienced in procuring timber for the machines, which has to be imported, the trouble being apparently that the Australians have not learned the art of seasoning timber.

If the Australians are going to build B.E.2c's, it is to be hoped they have also imported some A.I.D. inspectors, and a few chemists and metallurgists, otherwise if they try to build the machines in an ordinary way with ordinary steels they will be apt to kill a few pilots before long.

* * *

General work at Point Cook is said to be progressing steadily if somewhat slowly, three months being devoted to the training of eight officers. However, the course includes the whole art and much of the theory of flying, in addition to training in the care and management of engines and in reconnaissance, so the training must be very complete.

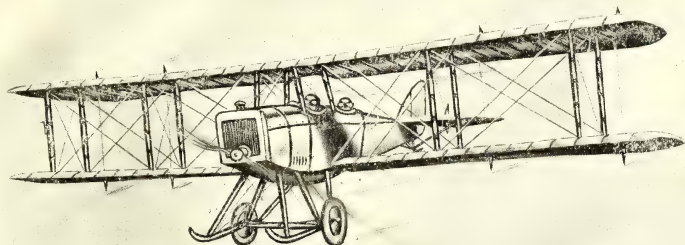
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Though the exact purpose of building stray biplanes in Australia may seem a trifle obscure to some people, it is thoroughly sound in principle, for in the not far distant future Australia must have a flying corps in proportion to her imperial importance, and though the manufacture of aeroplanes and engines in units from foreign raw material is necessarily rather an uneconomical process at present, the mistakes made now, and the lessons learned therefrom, all help to educate men who will form the nucleus of a great industry in the future, so that when Australia, a nation with a population of 40,000,000 or so, instead of 4,000,000, comes to fight her great war with the Emperor of Asia, or her war of independence, when she may want to cut loose from the muddle and stupidity of Europe—as the United States did—she will be self-supporting in her supply of aircraft, and will not have to start cadging off Allies and friendly neutrals, as England does at present, thanks to official intrigue and stupidity combined.

But, let Australia be warned against allowing officials to get the supply of aircraft into their own hands. Let the Australian Army authorities encourage independent makers of aeroplanes and engines, and independent experimenters, otherwise they will find the same official attempt to corner aircraft for the benefit of interested persons as has been made, and very nearly with success, in this country, and such a corner means an end to progress.

THE ROBERTS ENGINE.

The preliminary bench tests of the Roberts engine, to which reference has already been made, are reported to be highly satisfactory, and Mr. G. W. Beatty states it has now gone to be scientifically and officially tested. A striking feature has been the absence of vibration, and as the engine gives high power for its size and can be manufactured at a low cost, its future development will be watched with great interest.



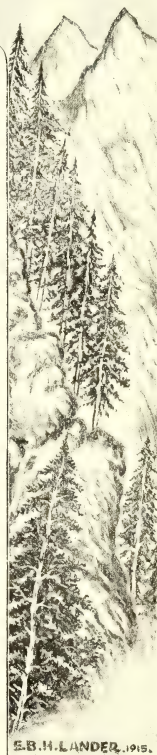
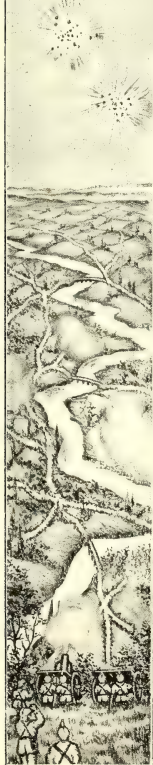
Thomas

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ITHACA, N.Y.

European Representative :
Oliver W. Thomas, "The Mount," Mavelstone Road,
Bromley, Kent.

Telephone - - 394 Bromley



E.B.H. LANDER, 1915.

AEROPLANE ENGINES AND GUNS.

The question of our unpreparedness in aircraft matériel was raised in the House of Commons on Monday, July 19th.

Mr. LYNCH asked whether a number of German aeroplanes have recently appeared driven by more than one engine, or carrying a gun larger than the ordinary machine gun; and, if so, whether such German aeroplanes have inflicted loss on the aerial forces of our Allies?

Mr. TENNANT: I understand that German aeroplanes have been seen which appear to be propelled by more than one engine, but that there is no evidence of German aeroplanes carrying guns larger than machine guns. There is no detailed information regarding the aerial losses of our Allies.

Mr. LYNCH: Now that the Germans are hypnotised by the Zeppelin idea, is not this just the opportunity for going ahead and gaining predominance?

Mr. TENNANT: I do not understand what the hon. Gentleman refers to.

Mr. LYNCH asked whether the Royal Aircraft Factory took any steps before the War to provide the multiple-engine aeroplane advocated by General Henderson; and, if so, whether any such aeroplane produced by the Royal Aircraft Factory ever flew before the War broke out or has flown since?

Mr. TENNANT: Yes, Sir, the preliminary questions of design had been considered before the War. I think it undesirable to give an answer to the second part of the question. The hon. Member is, of course, aware that the types of aeroplanes to be constructed for war are not selected by the Royal Aircraft Factory but by the Director of Military Aeronautics.

Mr. LYNCH asked whether the production of aeroplanes with more than one engine or carrying a gun larger than a machine gun was advocated by General Henderson, Director-General of Military Aeronautics, and by other persons closely connected with aviation in this country, some months before the War; whether such aeroplanes were in the possession of the Royal Flying Corps on active service before the appearance of the multiple-engine German aeroplane recently mentioned by the official Eye-witness; and, if not, will he say why not?

Mr. TENNANT: The answer to the first part of the question is in the affirmative, and to the second part in the negative. The provision of other types of aeroplane was more urgent, and it is very doubtful whether the two-engined German aeroplanes which have been seen are of the type advocated by Sir David Henderson, and I am informed that they are not necessarily more efficient than single-engined machines.

[Which amounts to an admission that despite all warnings, the technical advisers of the R.F.C. had got no further than "preliminary designs" in two years.—Ed.]

REX v. AN AVIATION COMPANY.

On July 14th an appeal was heard before the Master of the Rolls, Lord Justice Pickford and Lord Justice Warrington, from a decision of Mr. Justice Avory on July 8th, reported in this paper last week.

Mr. Leslie Scott and Mr. Gover, for the appellants, contended that the common law prerogative of the Crown to interfere with the rights of subjects was confined to cases of urgent military necessity, such as an actual invasion. The authorities showed that the prerogative did not extend to acts done by the Crown for the general purpose of prosecuting the war.

The right to compensation was conferred in cases like the present by the Military Lands Act, 1842, which codified the law laid down by Acts of 1803 and 1804, and those Acts had been passed in time of war. The Crown was certainly entitled to take possession of the land under the Defence of the Realm (Consolidation) Act, 1914, but the question was whether the right of compensation was taken away. The Act did not take away the

right of compensation, but only authorised regulations for the suspension of restrictions on the acquisition of land. Regulation 2 only did away with the restrictions imposed on the acquisition of land by the Crown. A right to compensation was not a restriction. If the regulation did purport to do away with the right to compensation it was *ultra vires*.

The Solicitor-General said that uncontradicted evidence had been given by a witness from the War Office that the securing of this land was a matter of public necessity. The exercise of the prerogative of the Crown was not attended by any obligation to pay compensation. The executive power must have the right to take such steps, irrespective of proprietary rights, as in their judgment were requisite to meet an emergency, and it would be unfortunate if the Courts were to scrutinise these steps too closely.

The only question that remained was whether the prerogative had been taken away or modified by statute. It was submitted that really the only statute in question was the Act of 1842. That statute had really no bearing on the action of the Crown in a crisis such as the present. One section dealt with the permanent purchase of lands, and the other was a section authorising a survey of lands required and an agreement with the owners for their use.

Ultimately the appeal was dismissed.

The decision strikes one as most unjust, for if it is permissible to commandeer ground which is outside the actual area of military operations and to drive out the tenants, it should be equally permissible to commandeer horses, vehicles, or motor cars without payment, or to billet troops on householders without payment, or, ultimately, to force men into the firing line without paying them. When confiscation is so cheap and easy, why does the Government trouble to buy anything at all?

This case originally appeared in the list of cases as being a petition by the Sussex County Aero Club, who are proprietors of the Brighton-Shoreham Aerodrome.

ANTI-AIRCRAFT ASSURANCE.

The Government scheme of insurance against aircraft and bombardment risks came into operation on July 10th.

Policies will be issued by approved fire insurance companies and by the War Risks Insurance Office (Aircraft Department), 33-36, King William Street, E.C.

Any person who desires to insure his house or other property against aircraft or bombardment risks should apply to his fire insurance company for particulars. Applications can also be made to the War Risks Insurance Office at the above address.

A brokerage of 5 per cent. will be paid by the approved companies and by the War Risks Insurance Office to recognised agents and brokers.

It should be clearly understood that, now that a public insurance scheme has been established, no liability can be accepted by the Government, and no claim can be entertained, in respect to damage to property by aircraft or bombardment, unless the property has been insured under the scheme.

The rates of premium (per £100), which are the same for all parts of the United Kingdom, are as follows:—

	Against aircraft	Against bombdmt.
	s. d.	s. d.
1.—Building, rent and contents of private dwelling-houses and buildings in which no trade or manufacture is carried on	2 0	3 0
2.—All other buildings and their rents	3 0	4 6
3.—Farming stocks (live and dead)	3 0	4 6
4.—Contents of all buildings other than those specified in 1 and 5	5 0	7 0
5.—(a) Merchandise at docks and public wharves in carriers' and canal warehouses and yards, in public mercantile storage warehouses, and in transit by rail	7 6	10 0
(b) Timber in the open	7 6	10 0
(c) Mineral oil tanks and stores (wholesale)... ..	7 6	10 0



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AT the present moment the man who can fly has the ball at his feet, the greatest opportunity he will ever get in his life-time of rapid advancement in R.N.A.S. or in the R.F.C. If you intend joining your country's air services it will pay you to join the Beatty School first.

¶ We train all our pupils with this view foremost, and it says something for our methods of tuition that nearly every pupil we turn out gains his commission.

¶ This is only the result of our careful study and years of experience as instructors in flying.

¶ We have the biggest civilian school in the country, because we possess the most competent staff of instructors, the largest stud of school machines of different types and varying horsepower, and because we put enthusiasm, energy, and determination into our training.

¶ Now is the moment for new comers to enter the world of flight, our huge aerial fleets call for more pilots, and the well-trained man has the chance of his life. The training and that chance we provide.

For details, terms and full particulars write the Secretary

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HENDON - - - LONDON, N.W.
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COMING DOWN

THE ACCELERATION OF AIRCRAFT PRODUCTION.

At the Guildhall on July 14th, before Alderman Sir John Baddeley, William Terry, an engineer's assistant, was summoned on a charge of maliciously damaging machinery to the extent of £13.

Mr. H. W. Wickham, who appeared in support of the summons, said the defendant had been employed by Mr. Albert Edward Shiner. He worked at a lathe turning out parts of aeroplanes. On July 5th the foreman found him in the workshop smoking and the worse for drink, and he was dismissed. He thereupon became abusive, and shortly afterwards the noise of breaking machinery was heard. The defendant was found standing by the lathe. The bottom belt was loose and two gear wheels were broken. Just before his dismissal the defendant had demanded more money, which was refused. He was earning £2 12s. for 54 hours, and his earnings averaged £3 5s. or £3 10s. per week.

Mr. Shiner, giving evidence, said that his firm was now entirely engaged in making munitions of war, and the damage done by the defendant would cause delay, as it could not be remedied under 14 days.

The defendant denied the charge, and alleged that the prosecutor was actuated by malice because he (the defendant) had joined a munitions brigade. When the prosecutor knew he had done this he stuck up a notice in the workroom to the effect that all men in his employment were on war work and would receive badges. He admitted that he had been smoking during working hours, but declared he had decided to leave the job as he wanted more money. He also admitted that he had "had a few drinks."

The defendant was ultimately fined heavily and condemned to pay costs. He appealed.

* * *

Aeroplane manufacturers may be interested to know that Messrs. R. F. Wells and Co., the constructors of the original and well-built Reo biplane, are prepared to receive orders for aeroplane parts and to construct complete units such as planes, fuselages, rudders, empenages, elevators, etc.

The firm is competent to do welding, brazing, wire splicing, etc., and aeroplane builders should find it well worth their while to address enquiries to 10A, Elystan Street, Chelsea, S.W.

AN EXTRAORDINARY ESCAPE.

The following letter deserves to be widely read, as it shows the very real advantage of wearing goggles which

afford definite protection to the eyes under circumstances in which ordinary glass goggles would have failed and almost certainly have caused loss of life:—

"To the Triplex Safety Glass Co., Ltd.—July 14th, 1915.

"Sirs,—I enclose a pair of Triplex goggles I had from you some time ago. You will observe that although the glass is all there it is badly cracked and the frame is severely burnt.

"My aeroplane was set on fire by a German shell at a considerable height, and I think that I would have lost my sight, and consequently my life, if I had not been wearing your Triplex goggles. As it was, I was able to effect a landing in spite of the flames. The machine was completely destroyed in a very short time. Please send me another pair of goggles.—Yours faithfully,

"XXXXXX."

[The editor can vouch for the genuineness of the letter, which is certainly remarkable testimony to a most useful article which should be a part of every pilot's outfit.]

GRAMOPHONE RECORDS FOR THE R.N.A.S.

Men at the Royal Naval Air Stations, both at home and abroad, frequently ask whether the R.N.A.S. Comforts Fund, managed by Mrs. Sueter, wife of the Director of the Air Department, can let them have gramophone records.

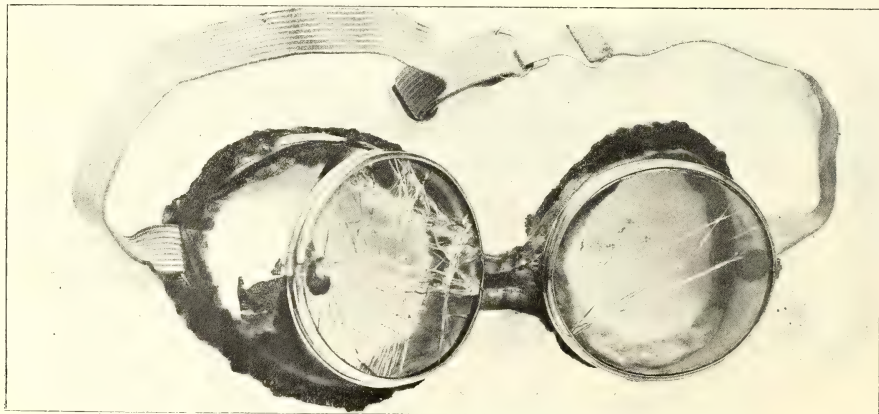
All owners of gramophones must of necessity have a number of records with which they are utterly bored, and doubtless the men of the Royal Naval Air Service are equally bored with those already in their possession, so that it would be a kindness to them, and especially to the officers who happen to live within range of the said gramophones, if those possessing a superfluity of ammunition for these weapons would give their surplus to the men abroad.

Any that can be spared should be sent at once to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.

FOR THREE-PLY WOOD.

There seems to be a mistaken impression in the aircraft industry at present that there is a shortage of three-ply wood suitable for aircraft work.

Among the firms who can supply this article, Wm. Mallinson and Sons, Ltd., 130-138, Hackney Road, London, N.E., state that they are in a position to offer waterproof three-ply wood of home manufacture which stands the tests imposed by the Aeronautical Inspection Department, and also imported three-ply of the type hitherto most generally used.



A pair of Triplex Safety Glass Goggles which saved two lives.

FIRTH'S AIRCRAFT STEELS

USED BY THE
LEADING AEROPLANE AND ENGINE BUILDERS.

Special qualities are made
to meet all Royal Aircraft Factory Specifications
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FIRTH'S F·M·S. SHEET STEEL

Has been specially prepared to meet the R.A.F. Specification No. 9.

London Office: 8, THE SANCTUARY, WESTMINSTER.

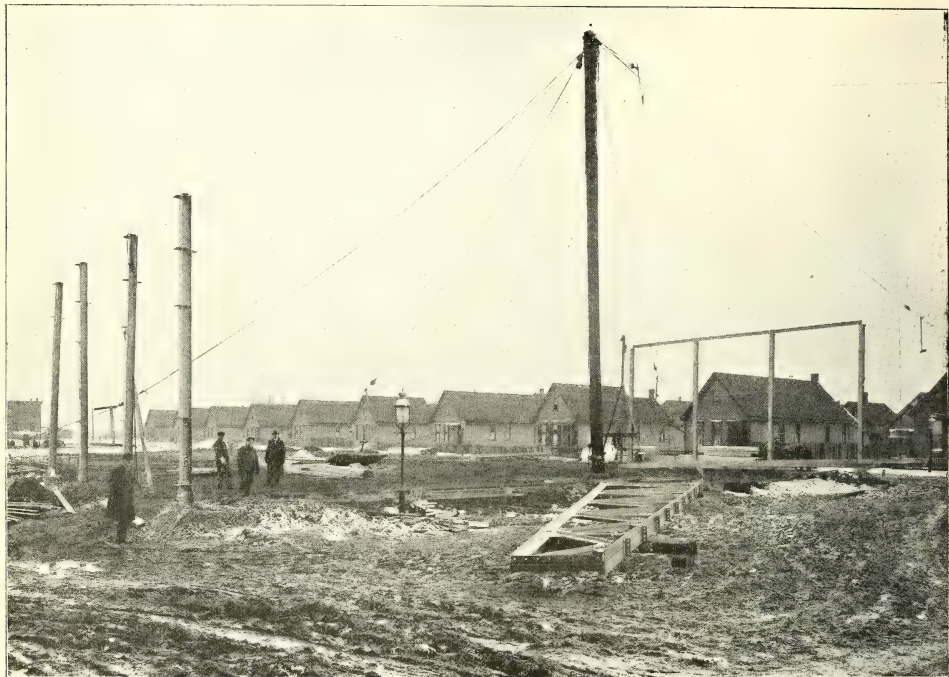
WRITE FOR DESCRIPTIVE BOOKLET TO

THOS. FIRTH & SONS LTD., SHEFFIELD.

VICKERS LIMITED.

Contractors to the
WAR OFFICE AND ADMIRALTY.

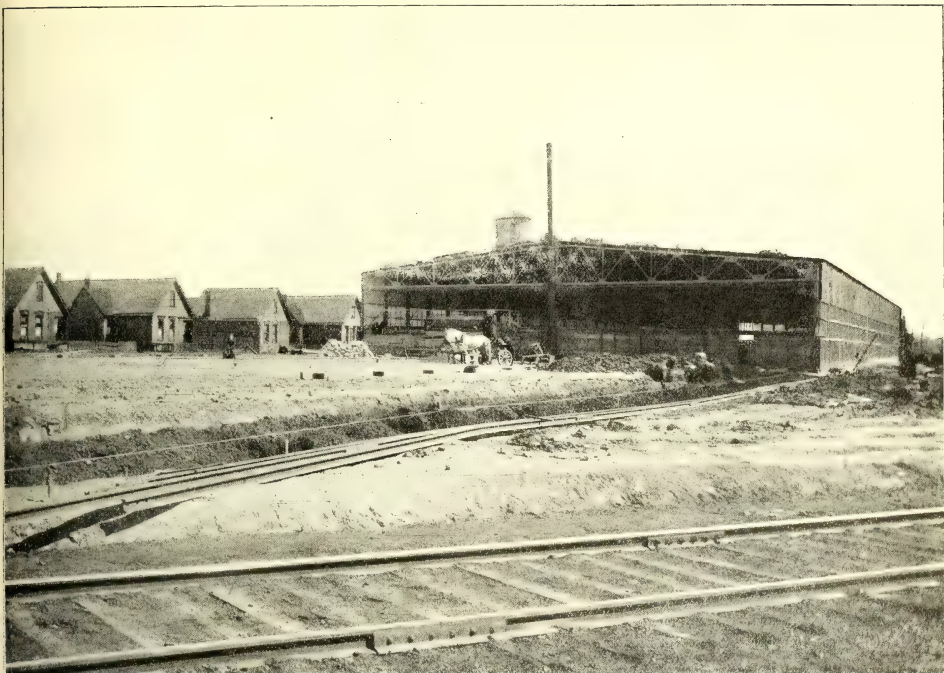
Aviation Department, Vickers House,
Broadway, London, S.W.



THE PRODUCTION OF AN AMERICAN AIRCRAFT FACTORY.—A New Curtiss Factory on March 30th, 1915.

ACCELERATING AIRCRAFT PRODUCTION

TEN companies, each with resources, experience and organization equalling that of the Curtiss Companies, could easily turn out 10,000 aeroplanes. During last August and September the Curtiss Companies increased their output from an average of six machines a month to one of six machines per week. In another two months the output was increased to two machines per day. This has now been put up to six machines per day, and in a few days it is expected to average twelve machines per day. Is there another company in the world with equal experience and facilities? Following are shewn some reasons why the Curtiss Companies may reasonably be expected to turn out more machines and better average machines than any firm in the world. A year ago the Curtiss organization was "top heavy." The number of foremen and superintendents was out of proportion to the



THE SAME FACTORY ON APRIL 21st.—In three weeks it is almost ready for occupation, with its own railway siding.

total number of men employed, because whenever the Curtiss Companies found a really good man they kept him on during thick years and thin ones. Consequently when the call came for expansion there were plenty of experienced executives ready to take up the instruction of new crews. Curtiss Aeronautical Motors antedate the public acceptance of flying as a practical means of locomotion. Mr. Glenn H. Curtiss began building motors for dirigible balloons before the success of the aeroplane. He had been building light motors ten years before that, and has been building them continuously since. He was the first man in America, if not in the world, publicly to demonstrate an aeroplane with ailerons (1908). Further reasons and more pictures will appear shortly.

The Curtiss Motor Company

General Representative, L. J. SEELY, Clun House, Surrey St., W.C.

THE BIG GREEN ENGINE.

For some considerable time before the war it was fairly generally known among those interested in motors for aeroplanes and motor boats that the Green Engine Co., Ltd., was building a big engine of some 300 h.p., the engine being a V-type twelve-cylinder, consisting of two rows of the well-known 100 h.p., of the type which won the Naval and Military aero-engine competition, but with bigger cylinders. This engine was completed not long ago, and has recently been "running in," prior to doing full power trials.

The writer was invited last week by Mr. Fred May, the managing director of the firm, to inspect the engine and to take its first photographs. These are reproduced herewith, and, though they will be of decided interest to those who are favourably disposed towards big engines, they cannot well give any information to the enemy, seeing that the really vital novelties about the engine are not visible and that the general scheme of the engine is not new.

The novelties chiefly concern the double ignition system, the lubrication, and the valves, and so must not be described. For the rest, the valve mechanism is on the familiar Green system, but arranged so that each cylinder is a separately removable unit.

Probably it is better not to give exact cylinder dimensions, or weights, for the full horse-power as estimated from a comparison of what the engine is giving now at low revolutions per minute with the power-curve of earlier and smaller Green engines built to similar designs minus the detail improvements, so it may be generally referred to as the 300-h.p. Green.

Big as the engine looks, it should work out quite light for its full power, and, like all the Green engines, it is a fine job of work, regarded purely as workmanship.

Though designed either for sea-craft or air-craft, it is in the latter capacity that it is of most interest; and one would very much like to see it performing in an aeroplane built to scale. Meantime, judging by the running on the bench, it seems notably free from vibration, and

appears to be giving a large amount of what is commonly called "beef."

It is to be noted that the enormous baulks of timber on which it is mounted are not examples of the engine-bearers recommended by the makers, but are merely there to hold it down, so that the engine may not turn itself inside out if a propeller bursts. As a matter of fact, Mr. May told the writer that he is quite prepared to run the engine full bore when it is simply slung up on four chains, one at each corner, just to show how perfectly balanced it is.

Mr. May's pertinacity in keeping the firm going when everyone else was convinced that there would never be any demand for British aero-engines is highly to be commended, and one hopes to see him reap his just reward.

FOR WORKED OR RAW TIMBER.

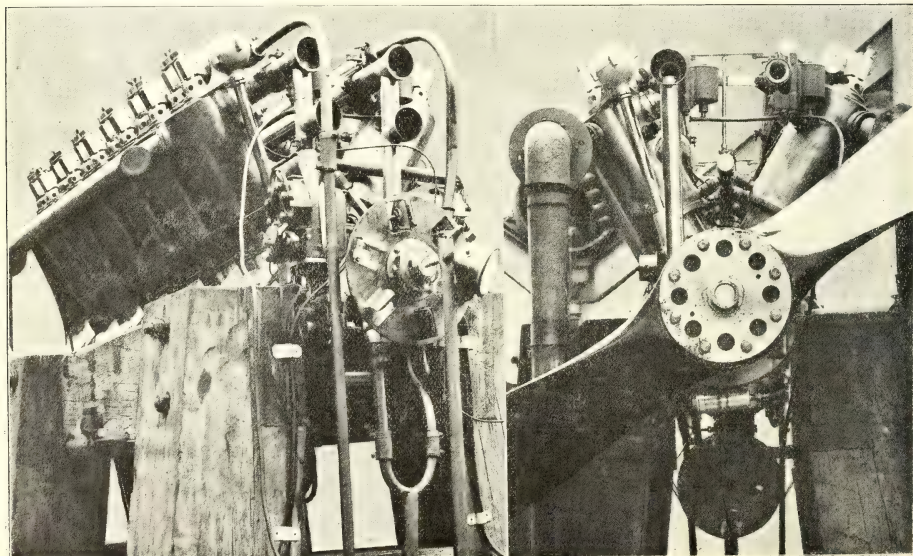
Messrs. W. G. Evans and Sons, 1-4, Williams Mews, Stanhope Street, Euston Road, London, N.W., having recently completed an order for strut-fairings for a large number of machines of Government design, are now open to accept more work of a similar nature.

Although still doing some aeroplane work the firm is not fully engaged on war work, and both employers and employees are anxious to be doing munitions work.

It is, therefore, well to remind aeroplane manufacturers that the firm is equipped with the necessary amount of machines and material to turn out work guaranteed to pass Government inspection on a much larger scale than heretofore. Moreover, if still larger quantities are required the firm is prepared to make arrangements to turn out five or six times the amount of work.

The firm is also prepared to supply three-ply wood of the best quality in quantities and in practically any sizes.

The writer has recently had the opportunity of inspecting some of the work turned out by Messrs. Evans and Son, and can vouch for its being thoroughly well done. The percentage of work rejected under the rigorous (but always just) A.I.D. inspection is very small, which is the best possible testimony to the quality of the work.



Two end views of the Big Green Engine, showing, on the left, the dog plate into which a crow-bar is inserted to crank the engine over before switching on.

THE GREEN ENGINE CO. LTD.

166, Piccadilly, London, W.

CONTRACTORS TO HIS MAJESTY'S GOVERNMENT.



NOTHING BETTER

A. V. ROE & Co. Ltd.,

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"TRIPLANE."

Telephone :
337 Fallowfield.

Small Factory Output and How to Speed It.

BY GEORGE H. MANSFIELD (Joint Author of "The Motor Accountant" and "Repair Shops and Stores Accounts").

CHAPTER V.

WORK-TAKING AND PROGRESS RECORDS.

This subject is undoubtedly most important to the rapid output or to any system of speeding the same up, because the routine of the work-taking department, which is also the work-giving department, and the results of such work should be shown precisely in the progress records at any particular time of the day.

The work-taking department will be in the hands of the work-taker, usually a man who has a good knowledge of the machinery employed, the capabilities of such machines and their workers, and the capabilities of the different benches of hand-workers; he will also be in possession of the details of the whole work on all contracts, so far as they concern his particular shops. That is, there may be departments concerned with the work at an earlier or later stage which do not come within the scope of the work-taker—for instance, "finishing" in some cases, or "assembly" or "erection" in others.

The work-taker, having been furnished with all the information necessary, will be able to arrange his work in such a manner to provide for the completion of the required number of articles to be first delivered and the whole consignment to be completed in the order and rotation of required deliveries.

To emphasise and more clearly define the inner meaning and reason for this method of arrangement, we can assume that a firm receive an order for 100,000 fuse-boxes or 100,000 parts of hand-grenades. The contractor placing this order will require deliveries weekly—say, 5,000 a week are contracted for. If the work-taker does not regulate his work in such manner as to give deliveries regularly, the result is that the firm who have entered into the contract to finish or carry through further operations—for instance, fitting or machining—will in turn be held up, and then the uncertainty of delivery of the partly finished articles will prevent the following contractor or contractors organising their work as they would have originally intended to do.

The probable result is that deliveries are made spasmodically, and then the parts will have to wait for some days, either until the operators have finished off the work they are on or the machines have been cleared. In some cases, too, undoubtedly frequent, the machines have other work put on them. Which must then mean that the parts will have to wait, not only until the machines have been cleared, but also until they are again set up for these particular parts.

The proper organisation of the work-taking department, therefore, is really the pivot on which deliveries turn.

As stated, the work-taker is provided with full particulars of the work—i.e., complete drawings, the required number of blue-prints, details of material and quantities required, and further special details as to manufacture and the required rate of deliveries. With these details he is

able to decide on his routine for the execution of work, and will have his "tallies" made out and "progress records" prepared and the work put out.

Together with this information the work-taker will receive his official order to carry out the work, and such order will contain the number of the job—i.e., the factory number and the numbers of the respective parts, together with their drawing numbers, which latter numbers will also appear on the blue-prints.

A suitable form of "factory order" is here illustrated, while the form of "tally" is also shown. The order will be made out in the offices, but the "tallies" will be made out by the work-taker's clerk according to instructions.

After the "tallies" have been made out and duly recorded on the "progress sheet," the "factory order" can be filed on a visible file in the "work-taker's office" with others representing the actual work in hand in the shops.

A copy of this "factory order" is retained in the offices, and thus shows exactly which and what work is in the shops, with full details thereof; while records of the "progress" can be provided, and thus the manager is able to supervise the actual progress of output.

A further copy of the "factory order" is also sent to the cost department, so that they may be in possession of the details of the work going through the shops, and this copy sent to the cost department should be kept up to date as the actual copy of the "factory order" as it appears on the work-taker's file—i.e., with the sundry part numbers and operatives' numbers noted.

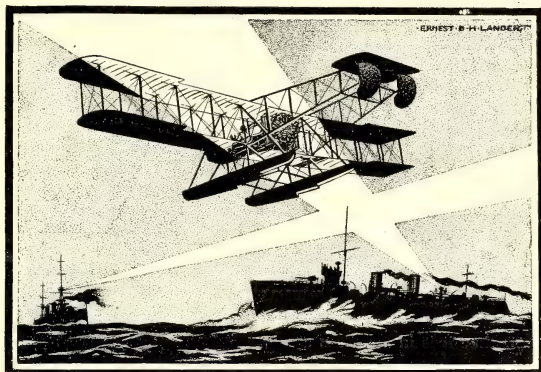
It is likely that during the progress of the work the operative's number will be altered, owing, perhaps, to one operative leaving and another taking his place, or

The _____ Co Ltd.																																																																										
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To Mr. _____						Job No. _____ Part No. _____																																																																				
Please have the following work put in hand:—																																																																										
For order or Contract No. _____						Dwg. No. _____																																																																				
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A Specimen "Factory Order."

THE WIGHT SEAPLANE

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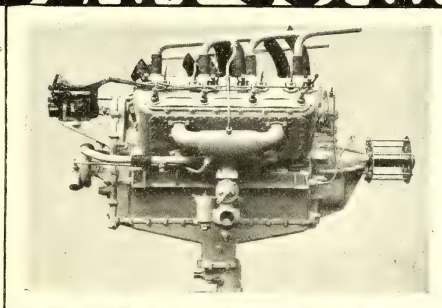
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the work even being transferred from one to another, but this need not be important, the main point in the information required by the cost department being the details of the actual parts in course of manufacture in the shops.

The actual question of "cost-keeping" is not dealt with here, but is the subject of a chapter in "The Motor Accountant."*

The "tallies" are handed out with the work, drawings, material, and other details, to the shop foreman, who will in turn put it out to the charge-hand. The relation between the work of the "work-taker" and the superintendents is very close, in that the "work-taker" will not be able to decide on the distribution of the work, except after careful consideration with the superintendent in question.

It may seem, therefore, that the work-taking department is merely an exaggeration or duplication of the respective superintendents' duties. This, of course, is not so, since it must be necessary for the superintendent to be continually in the shops, assisting charge-hands in their work and generally regulating the actual work going through the shops, while the work-taking department, with which is incorporated the progress department, is keeping the organisation and records in order and up to date.

The "tallies" form the label of information in regard to the particular work all the time it is in the shops and until such work is passed to the finished stores.

From the "tallies" the time spent by the different operators can be recorded either by them or by the time-keepers, as the case may be, arranging the record of that information, while the "progress" is also recorded from these "tallies." When the parts ultimately go to the inspection department for passing, they can be recognised from the information on the "tallies," and likewise the finished stores attendants are able to record and deal with the parts from the same information, although by the time the parts reach the finished stores they may in some cases be stamped with their actual drawing and part numbers.

It is important, therefore, that the organisation in the shops should provide against the careless handling of these "tallies" by the operators, and should prevent the loss of "tallies" as much as possible.

If the "tally" be lost, the operator will at once say, if he makes an excess quantity of parts or not enough, or is in any other way delinquent in regard to the matter, that he had no "tally" and did not therefore know.

* "The Motor Accountant" (published by "The Motor Trader," 19-21, Wilson Street, London, E.C.) has recently been sold out, but a revised and up-to-date edition will, it is hoped, be published at a later date.

It is quite easy to arrange the organisation of the "time-keeping," or even the instructions to viewers, so as to guard against confusion of this kind, which must inevitably affect the whole progress of the work.

By the provision of a good organised routine for work carried out, an automatic check on such work is simultaneously created—*i.e.*, taking the foregoing details of work-taking and considering, also, the following concerning the “progress” records.

We can assume that an order is put out, containing twenty-five different parts. The work-taker, the cost department, and the progress department all have the same information in regard to the actual quantities required and to be put into the shop, as well as the detailed nature of the work. These three departments are therefore all looking for information to record continually in regard to these parts, while the administration is also in possession of the information, or is able to obtain the same, so that, if certain parts are not being proceeded with, or the progress on any is slow, there should be no less than four different departments, apart from the actual shops, which automatically become aware of the facts. Thereby delay should be avoided, or the cause of such delay can be attended to and removed as soon as it becomes possible.

Although it is a fact that manufacturers have experienced and still have to contend with difficulties in obtaining labour, keeping the operators at their work, in obtaining raw material, and perhaps in some instances with sickness amongst the employees, it is certain that a deal of delay, although hidden under the cloak of one or more of these possibilities, has been really occasioned through the absence of an internal check which therefore really amounts to mismanagement.

There are cases when for weeks the "agent," on whose head, by the way, the delay in delivering munitions of war has fallen, often because he has obtained contracts through misrepresentation, has written the contractor that the work is in hand or that deliveries will commence "next week," when in reality the work is not even in hand. Perhaps this question of "agents" is beside the point, and for the time being can be left.

Once mismanagement, such as produces the absence of

TALLY.

PARTICULARS.

_____ Drg _____

Job No. _____ Part No. _____

No off. _____ Operator's No. _____

Date Issued. _____

Date Finished. _____

Passed Insp. _____

Received Finished _____

By _____

Date _____

A Specimen "Tally."

[illegible]

A Specimen "Progress Sheet."

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internal check, creeps into the routine of a factory, it cannot be put right again in a few days; and, once the routine arrives at such a pitch, other matters which rapidly increase the mis-organisation come along daily.

As an instance, some customer gets restive for deliveries and sends his representative to the factory to investigate matters, generally with instructions not to come away empty-handed. The result is that the goods for some other customer are delivered to this customer, who has called with the object of going back with something, at any rate.

The result is obvious. Departments get confused as to where the parts coming out of the shops are really going next, and so on.

It is quite true that, at times such as we are all passing through now, there is need for "rush," but there can be no "rush" if routine is replaced by mis-organisation. Likewise there can be no organisation if the staff are not there, and the fundamental principles are all thrown to the winds, because everyone is so busy. Such statements may seem sweeping and unnecessarily candid; but, nevertheless, they are true, and are founded on facts which are not only true to-day, but since August, 1914, have been proved many times, and have therefore seriously affected the output from numbers of small factories.

With regard to the keeping of "progress records," on page 78 is illustrated a "progress sheet." A set of these sheets is kept in a folder for each contract, or rather for the various parts going through the shops in respect of each contract. A perusal of this illustration will indicate the nature of the information kept thereon by the "progress clerk."

The "progress sheet" is first written up from the "tallies"—i.e., as to "job number," "description of parts," "part numbers," "number off," "date commenced," and "first operator's or charge-hand's number."

As the work proceeds so are the further particulars filled in; the progress of the work from one operation to another is recorded when the work is returned to the work-taking department for inter-operation and inspection, after which the parts pass through to the next operation.

The numbers "scrapped" (if any) and the number received by the "finished stores" are recorded, and can be checked with the returns of the inspection and finished stores departments respectively. If the details of this work are carefully watched and maintained, there is no

reason why these records should not be kept up and the actual position of the work in the shops at any moment be properly and truly recorded.

The whole thing really depends on the systematic methods of not more than six persons, which methods come in the following order:—

(a) *Works Manager's Office*.—Issuing of complete information as to drawings, etc., and the correct official factory order.

(b) *Work-taker's Department*.—Issuing of the "tallies," etc., and proper record of same on the "factory order."

(c) *Shop Foremen*.—Supervision of work put out.

(d) *Progress Department*.—Keeping up to date with progress sheets and periodically checking same as to parts completed and delivered to finished stores.

(e) *Inspection Department*.—Concise returns of parts dealt with and results of inspection.

(f) *Finished Stores*.—Correct returns of parts received and accepted.

In the ordinary course of business there will inevitably be difficulties at times, parts may be rejected and scrapped and have to be made again when fresh "tallies" should be issued for such quantities. Alterations to drawings may be received, certain parts may be cancelled and others may be added, but always these difficulties can be contended with.

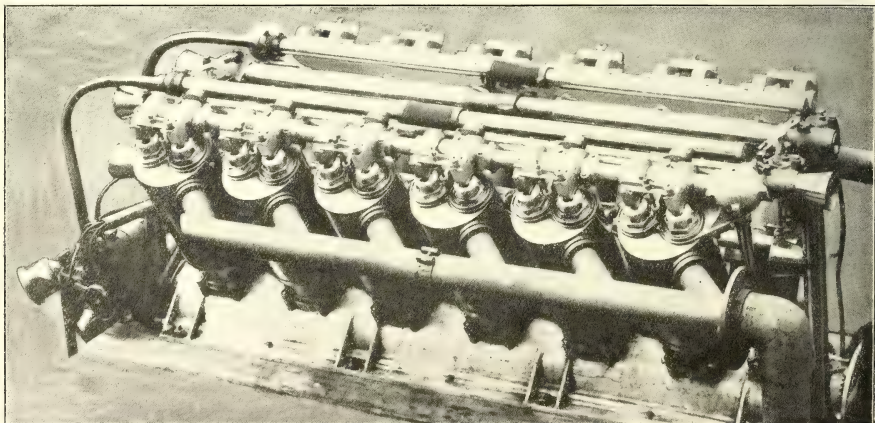
They may tend to delay deliveries, but with a good organisation such delay can be minimised, while without proper organisation delay eventually becomes indefinite, and then all the familiar reasons for such are brought out and paraded in front of the wretched individual or firm who is waiting for such deliveries, while the persons responsible for the internal check that should be, and therefore perhaps only unconsciously responsible, have to take the brunt.

Thus, money spent in organisation can only be well spent. If it is not worth the money there cannot be the orders in hand to justify any work being tackled at all.

On the other hand, a contractor who takes on a contract without organisation in his shops is not only going to become a nuisance to his customer, but at the end of his financial year his profits are going to be disappointing.

A system in the stores saves money. Organisation in the shops saves worry and speeds output. And an internal check in the offices clinches the deal on the right side as far as it is possible.

(To be continued.)



Top view of the nominal 300-h.p. Green engine. As may be seen, the engine does not depart from conventional Green design, but the battery of twelve large cylinders presents an imposing sight, and the workmanship is excellent.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

Beneath the tired lids of the day's work, how thin is the veil between the subconsciousness that knows all things gladly, needing no more to hope nor endure, and the old slow consciousness painfully groping for truth. So slight, yet stronger than any steel in the dawn's forgetfulness of dreams. And when so many abiding mysteries are set between the first cry and the last silence, for pity's sake let us make no more, leave nothing hidden to mar fulfilment, even to the obscured trifle of a motor's cooling, upon which who knows what destinies may hang? Truly, then, I believe I have faithfully cleared that obscurity at least, and shown all of the little there is to it. That all that could be on this score has been happily achieved in the Anzani motor seems to me, therefore, the best that can be said of it, or any other air-cooled motor in this respect. At any rate, now that it has been shown, you may notice that the costliest rotaries and others, follow this system of node and anti-node fin-generation.

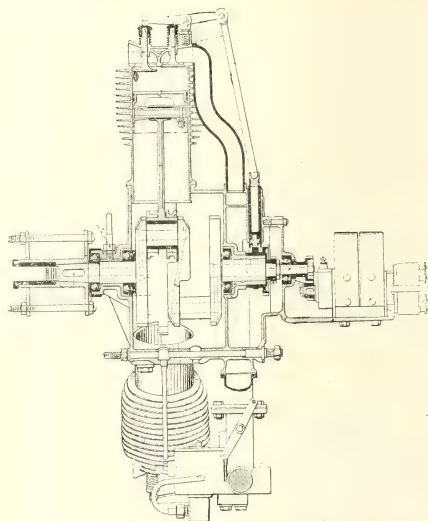
So, little as it is, I am emboldened to believe that not Ambroise Farcot, Robert Esnault-Pelterie, Alexandre Anzani himself, or any other practical designer of air-cooled motors—let alone M. Witz—could tell you any more about it. So slight a thing, indeed, as to be beneath the notice of the majority—who are not Anzani—as you may observe at any motor-cycle show. But when tooled out of solid steel, with a slightly different curve—that makes all the difference of efficiency in B.T.U.'s—on every fin, you will see at least one reason why such motors cost so much to produce: and why even cast cylinders thus refined, run into money. Personally, in designing, an air-cooled cylinder, I should allow at least a thousandth tolerance on each fin-curve, to permit its surface—even as a casting—to be skinned before passing the piece into store or the erecting-shop: preferably into the former, to recover its nature and find itself generally. Of course, this also means a bunch of templates, one for each fin, while the cylinder is being spun; and a master template for the set. More expensive; but first cost only. There is only one way to make a motor; the best way that you know; and reputations are not bought cheap.

THE CYCLE MOTOR TRADITION.

So much for the immediate physical aspects of an air-cooled aeromotor—such as the Anzani, for instance. Mechanically, one sees more and more during its dissection, how the traditions of cycle-motor practice—and of the best kind, apparently—rule its design and make-up in nearly every detail. Curiously there is one exception—to be dealt with later—in which, had this kind of practice been strictly followed out, even greater simplicity and strength as well as quicker assembly, might well have resulted. However, the type of practice is clearly admitted; for was not Alexandre Anzani known not only as a maker of cycle motors, but as a rider gaining his maker's experience on the road in all the great French races and hill-climbs? And this long before the Wright Brothers in America, or Igo Ettrich at Neustadt were bringing flying within arm's length of realisation. Also, what was his original three-cylinder fan-type aeromotor of 50-h.p. but a gigantic edition of a type that had already been made-up, not only for his own use, but by two or three makers of track machines in the United States?

WHERE IT FAILED.

However, this system of fanwise arrangement, though it certainly provided an extra kick, had its serious disadvantages. Manifestly required—if a third cylinder was to be used at all—by the structural and road conditions of motor-cycling, in that capacity, it compelled a setting of about 72 degrees between the cylinders. But



Sectional View of the typical Anzani Motor.

since 72 degrees is only a fifth of 360 degrees, instead of one-sixth or one-third, the immediate defect of the arrangement was irregular timing of the firing, and consequently every other period of the four-stroke cycle. The best that could be done, therefore, was to gear the magneto to one and a quarter times the shaft speed, so as to fire at 144 degrees, again at 288 degrees, and a third time at 432 degrees; that is to say, at 72 degrees before the end of the first crank revolution for the second cylinder, and at the same point the second revolution for the third one. Which, of course, left a certain inevitable gap in the timing; and although this irregularity—as most early-day pilots will recollect—occurred regularly enough, the torque on the crankshaft was terribly uneven. So far, then, even M. Anzani seems to have been misled into continuing what was at best a motor-cycle makeshift, for aeroplane use. However, as the defect was soon apparent—and, furthermore, gave the motor no chance of flexibility, as one dared only run it at top speed aloft—he designed the Y type, which at least gave a regular firing period throughout the two revolutions of its cycle.

ANZANI CONSTRUCTION.

Apart from obvious differences in type—mainly the size, number, and disposition of cylinders—Anzani construction is identical in detail—as far as possible, that is—in all models. So much so, that the chief reason, for instance, that two carburettors, instead of one, are fitted to the big 200-h.p. 20-cylinder model, is to avoid any change in the standard induction parts of the two “ten” series composing it.

To begin with the crank-chamber as the foundation of things, except that it very usefully embodies an induction ring—from which the carburettor is hung—and the housing of the valve-gear behind, there is nothing very uncommon, nor more than would be expected from such experienced practice, about its design; the metal being of a good thickness and the castings well ribbed internally between the cylinder-spaces; while the segments between the cylinders—through which the stay-

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bolts run—are nicely tongued and grooved to make oil-tight joints.

CYLINDER ATTACHMENT.

An excellent feature of the best cycle-motor construction—one that is none too often seen in that class of work—is the manner in which these stay-bolts—which unite the halves of the crank-chamber—are made to serve as anchorages for the colonnette-bolts by means of eyed heads, through which the stay-bolts run, securing the cylinders in place. In fact, this arrangement “secures” the cylinders in a fuller sense than mere attachment, and far more than is possible by the conventional flange-bolting. For through these colonnettes all the tensile strains set up by mixture-explosion are dispersed along the stay-bolts over the whole transverse area—one hardly speaks of “the length” of a drum-shaped body—of the crank-chamber, and breaking away is the last thing that can happen to any cylinder.

Translation—literal rather than accurate—seems to apologise for a certain percentage of copper in the aluminium of the crank-chamber casting, rather than—as was clearly intended in the original French—to emphasise its absolute necessity, in view of the excessive strains set up. So much so that, irrespective of any slight extra weight, one could wish the proportion of copper in the alloy were twice as great.

Cylinders need no further discussion than they have already had in regard to their fin design; nor description—since the use of specially fine cast-iron is not exclusive to any make—except to say that the colonnette attachment, through lugs on the heads and castle nuts, and the way in which the foot-flanges act as steadies only, make detachment for valve-grinding particularly easy.

CERTAIN VALVE DETAILS.

This, too, the more since there is only one valve—the exhaust—to adjust as to the gear-lift. For the inlet valve—of the automatic type, another instance of motor-cycle practice—merely has its button threaded, as well as pinned in the usual way, on the shank; so that its weight—positive, neutral, or negative, according to the cylinder position—may be compensated by adjusting the spring compression to the right degree from time to time.

Well enough this, so far as it goes. But seeing that the reliability of any a.o. valve depends solely on the life and quality of its spring, and that the said spring in this case is set on a flat head no wider than the cylinder bore—a condition in which heat radiation, a constant quantity, becomes the more intense on a smaller given surface—one would say that the working conditions specially demanded the use of roller or “rat-trap” springs of the Canton-Unné type, rather than the ordinary cylindrical coil kind, as fitted to both inlet and exhaust in the Anzani.

The mounting of the valves, however, in transverse relation to the cylinder—i.e., back and front—is particularly helpful, not only to the easy fitting of the inlet and exhaust piping, but to the direct flow of the gases in and out. So, it follows, as the simplest and most mechanical method, that the exhaust valve—which is also parallel, but not necessarily vertical, to the cylinder axis—should be operated as it is, by a fulcrummed rocker extending to its button over that of the inlet valve, and jointed to a tappet spindle; the other end of which is socketed freely into the usual roller-mounted tappet-riser, working in a bronze tube, and lifted or dropped by a single cam.

THE ANZANI VALVE GEAR SYSTEM.

At this point we may notice that a single cam with only one ramp, and rotating at half the crank-shaft speed, but in the opposite direction, clockwise, operates all the exhaust valves, both in the Y and the six-cylinder models. In the ten-cylinder Anzani, on the contrary, this cam is not only duplicated, one plane for each set of five cylinders, but has two ramps on each plane. Now, the movement common to all Anzani models, from the Y type upwards, is that of a crank traverse missing alternate cylinders,

varying—as will be seen fully later, this being the key of the entire Anzani system—from 240 deg., or two-thirds of a revolution in the Y type, down to 72 deg. in the ten-cylinder model. So, in this last case, the movement for each group of five cylinders runs as to 1, 3, 5, 2, 4; and the cam-planes, with their opposed ramps, are set crosswise side by side. Also, geared as they are to run at one-fourth the crank-shaft speed—instead of one-half, as in the Y and six-cylinder models—it follows that two out of the ten cylinders are always working in the same period of the cycle—be it exhausting, inspiring, compressing or firing—at the same moment.

SOME POINTS ON PISTONS.

The Anzani pistons also require some notice, as much for what they might be in some respects, as for their merits in others. They are of cast iron, and as well made, in the way of judicious and clean machining and grinding as may be, to reduce weight, and to give an appropriate fit, on the easy side, to lessen friction and give the rings a chance. The said rings, too—a couple are fitted—have their upper and lower edges respectively bevelled out internally; with the idea—one must admit a likely one—of enabling the gas pressures below and above, to expand them radially outwards, and assist their action on the cylinder walls.

For the rest, the Anzani pistons appear to me better made than designed. Frankly, I consider them far too short-bodied. They are even less than the square—the conventional minimum length—in section; and this, with easy-fitting pistons, means bucketing during the angular connecting rod thrust, and consequent undue cylinder wear and ovalisation in no very long time: especially on the lower cylinders of a radial series. So, finding fault—and a very serious one—let me suggest the remedy by saying that one may lengthen the piston-trunk to the apparent limit—or even further, by curving out the bottom, back and front, and then keep the weight down easily, *as much and more*, by slotting the trunk freely upwards, on either side, in the line of the connecting-rod motion, and, again, between those slots, with others, lantern-fashion. Obviously, with these surfaces cut out, there is no more friction than in the short-bodied piston. There is even more room, on the intermediate tongue-pieces, for star-pockets or oil holes just where they do the most good; and, finally, the piston motion is steadied, wear lessened thereby, and a general percentage of efficiency gained over the entire motor.

Incidentally, too, one might suggest that the all-embracing motor-cycle practice—somewhat time-worn in this detail—need hardly have extended to the fastening of the gudgeon pins.

AND SOME INTERNAL POSSIBILITIES.

On the contrary—as was said earlier—it might with great advantage have been employed, in one way, to secure the connecting rod big-ends to their crank-pins. That is the way of the built-up crank-shaft; not only a well-known feature, almost a commonplace of cycle-motor construction, but to be seen in several examples of car-motors, as well as in almost every other radial or rotary.

Now, the big-ends—or “shoes” of the Anzani connecting-rods take the form of diagonal sections of a cylinder; or—though the idea of them may be so conveyed—their edges are tangents to two spirals of equal pitch which would run round this imaginary cylinder, if it were indefinitely lengthened. The arcs which these shoes embody, however, are kept just short enough to prevent their edges touching or crowding each other when the adjacent rods are at the smallest angle of their relative motion. Also they bear—three or five of them, according to the grouping—on a halved bronze bush, rotating on the crank-pin. Finally, shoes and bush are coupled up by their ends on the crank-pin, by two halved bronze rings or collars, bolted together, one on each side of the connecting-rods.

On the other hand, the great feature of the Anzani two-throw crank-shaft—which is, of course, absent in the Y type—is the thick central web; which, as will be seen,

really amounts to two webs, upper and lower, superposed centrally on each other, so that half the thickness of each constitutes a common middle third. Certainly nothing could be stronger, or, at the same time, easier to machine, as the buttress, so formed quite prevents the whipping to which most other S cranks are liable.

But there is nothing in this design—not even in its hollowing out for lightness and to form oil-leads—to prevent this crank being built up and assembled in three parts; of which the central web would be solid, right and left, with hollow male members of the crank-pins; the outer hollow female members of which would likewise be formed solid with the outer webs, right and left; the members of each crank-pin being locked together, Canton-Unné fashion, by a short screw bolt, inserted into the end of each male member, and with its head sunk flush into the outer surface of the side webs!

The obvious advantage of this system of crank-shaft construction for the Anzani—apart from its easier machining—would be that it would allow the crank-pin bushes to be formed and slipped on the pins in one piece; and the shoes to be attached over them by two complete rings on either side, instead of the halved collars, whose then non-existent cotter-bolts and nuts could not work loose, as such things—especially under reciprocating motion—are so prone to do. Absolutely no loose parts in the assembly or entire connection. So, why not?

(To be continued.)

THAT INSECTICIDE ADVERTISEMENT.

A somewhat amusing spectacle manifested itself recently in a certain suburb of London (known only to our indigenous censor), when a certain airship pertaining to the Royal Navy appeared over the district.

A little man stood in the street and stared at the apparition for a moment, rushed into his house, and brought forth the Metropolitan Police chart and gazed alternately at it and the intruder.

A crowd quickly gathered around, as only a London crowd can gather, and peered over his shoulders.

The little man grew more wildly excited as the size of the airship grew, and, suddenly breaking forth into speech, exclaimed to his gaping audience, "I perceive by this illustration"—pointing to one of the larger blobs—"that the airship is a German one!" And forthwith the more timid section of the crowd departed in haste in quest of cellars, respirators, and other comforts.

Of course, the airship was nothing of the sort, but, as the unctuous smudges of ink imprinted on the official diagram would hardly be identified by an N.P.L. figure-shifter possessing the imagination of a millinery creator, the man-in-the-street may well be forgiven.

THE INVASIONS OF ENGLAND.

The "Polytechnic Magazine" for July publishes the following letter from a member:—

"Last — week we were visited by the Zeppelins, and I had to take a dispatch by motor-cycle to a place about forty miles north of —, but fortunately not many bombs were dropped and very little damage done.

"On the following Sunday we were again visited and, as luck would have it, I was on duty. We had received previously messages stating that they were proceeding towards —, so all lights were ordered out in readiness. Altogether about thirty bombs were dropped and very extensive damage was done to property; but their main object (the wrecking of H.M. naval centre) was not accomplished, although a spy was caught outside our centre signalling to the Zep. with a flash lamp. They were, however, quite near enough, for a bomb was dropped about ten yards to the rear, which caused a small fire, and another was dropped about fifteen yards in front of our office, and this bomb caused an extensive fire in a large drapery stores. The estimated damage is

£120,000; in fact, the whole block of buildings was destroyed in the rear, and the church-tower on the opposite side of the road cracked. They also set on fire a timber yard, and this had to be allowed to burn out. Numerous houses were destroyed in various parts of the town, and in one terrace, with seven houses on each side, a bomb was dropped in the middle of the road, making a hole quite seven feet deep. The fourteen houses toppled over, and hardly a brick was left standing.

"Altogether there were twenty-five persons killed (mostly women and children) and about fifty persons injured. After the raid I had to go out to all the bombed areas, and make out a report to send to the Admiralty, and while I was out I assisted in digging people out of the ruins; some dead, some seriously injured. I also had to take charge of all the unexploded bombs. I saw the Zep. quite plainly. They are grand looking things, but when one thinks that such magnificent ships were built with the express intention of killing poor innocent women and children, it makes one wonder whatever the world is coming to."

[The date and name of the place appear in the magazine and have been elided by our own censor. It is in such minor ways as the publication of such articles with date and place that information gets abroad quickly, though doubtless by now numerous "neutral" friends have retailed to Germany all the information which is still suppressed by the British censorship.—Ed.]

A LITTLE HOLIDAY.

On Saturday, the 17th inst., the employees of the British Caudron Co. gave a dinner, followed by a musical evening, at Frascati's Restaurant, Oxford Street, at 6.30. Like many other aeroplane firms, the British Caudron Co. have passed through very rough waters on their way to success, and it was only recently that the Admiralty decided to encourage them with a small contract. The delivery of this batch of machines in good time necessitated much concentrated labour, and as the last machine had been finished the men felt inclined to let off steam, as it were, before starting on a much larger contract which the Admiralty placed with the firm on the completion of the first.

It has been found necessary to build an extension to the already commodious premises at Cricklewood in order to cope with this large order and to deal with the increase of business generally, and the festivities on Saturday evening also served as a kind of celebration of this highly satisfactory state of affairs.

The usual thing would have been a beanfeast, but, as that would have meant the loss of a whole day, the committee and men decided that it would not be in the best interests of the firm and the country at large to hold up even for a day the output of such important munitions of war as Caudron aeroplanes, so they decided to hold a dinner in the evening instead. This decision in this matter is an example to all munition workers, and one trusts that the same spirit animates everyone in the trade.

The arrangements were in the hands of Mr. Alfred Newman, supported by a committee, and the evening was an entire success from every point of view. After dinner a very enjoyable concert took place under the able direction of Mr. Chas. F. Grossmith. It was unfortunate that the heads of the firm were in Scotland on very important business, but Mr. Ramsay very sportingly undertook the journey from Scotland for the purpose of being present, which was very much appreciated by the men, and contributed in no small part to the success of the evening.

A telegram was read during the evening from Sir Wm. Ramsay, conveying his good wishes to those present, and also one from Mr. Hunter, conveying his regrets that he could not possibly be with them. J. F. A.

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AIRCRAFT ACCELERATION.

It is reported that the Earl of Norbury, who is reputed to be one of the best amateur mechanics in England, has been engaged as a fitter by a firm of aeroplane constructors in South London. The sporting effort of the noble Lord is to be applauded, for though some still more useful job could surely have been found him, he is setting an example to those who are too proud to work, much as some of our relatives are too proud to fight.

TO DESIGNERS.

The editor of this paper is frequently asked personally whether he knows of any experienced aeroplane draughtsmen and designers capable of taking on work for factories or for experimental work. Under the recent Order in Council no one employed on Government work may apply for situations elsewhere, nor may anyone take a situation more than ten miles from his permanent residence. There does not, however, seem to be anything in the Order to prevent unemployed draughtsmen with no fixed place of abode from accepting such situations, so he would be glad to hear from any professional engineers with such experience who are at present unattached, as it may be useful to have their names and addresses registered in case of future inquiries.

FOR MAP COVERS AND WIND SHIELDS.

The London Label Co., Ltd., of Plaistow, have marketed a useful material primarily intended for map case covers. This material, which is apparently of a

cellulose character, is almost colourless and very transparent and is ruled into squares for easy reading. The chief property of this sheeting, however, is that it is perfectly non-inflammable, and a match applied to it merely frizzles it away.

In the event of there being any demand, the firm is prepared to manufacture thicker sheets for windshields and panels, and the merits of the material seem well worth investigating. Bona-fide enquiries, mentioning THE AEROPLANE, will bring full particulars and samples.

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The scientific side of aeronautical engineering is a most important study, especially when one considers the need for improvements in the efficiency and safety of aircraft.

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The course includes problems and exercises for the student, the working out of which will give him a comprehensive grasp of the elements of the profession. Whoever wishes to go further in research can take up a special course in (1) aeroplane design, (2) aeroplane construction and materials, (3) aero engines, power transmission and propellers, (4) stability and control. Any student working through the whole course will receive a diploma A.B.S.A.E. (Associate of the British School of Aeronautical Engineering).

The principals claim that the institution is directed by experienced and long-established organisers and that the courses are framed by most capable instructors. The school has been established since 1906 and has had a useful and prosperous existence. Besides aeronautics it covers electrical, automobile and sanitary engineering.

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The London and Provincial School of Flying

NEXT VACANCY. JULY 28th

THE WEEK-END AT HENDON.

Last Saturday was one of the wettest Saturdays of the year. The wind was blowing a gale, and the gates of the aerodrome were not opened to the public, although this made no appreciable difference to the attendance.

Sunday, in some measure, atoned for this disappointment, for the weather was very pleasant. There was a good attendance, and the whole of the afternoon many machines were engaged in taking up passengers. The usual introductory flight by Mr. Osipenko opened the proceedings, after which almost every pilot was accompanied each time by at least one passenger. Messrs. Manton and Winter were on G.-W. biplanes, Messrs. Roche-Kelly and Prodger on Beatty-Wrights, and Mr. Baumann flew the 60-h.p. Ruffly-Baumann Caudron type, and Mr. Virgilio the 50-h.p. machine of similar build. Mr. Osipenko was continually engaged throughout the afternoon in taking up passengers, two at a time, on the five-seater, and late in the afternoon Mr. J. L. Hall gave a long exhibition flight on his fuselage-Caudron.

The Mann experimental biplane was brought out for the first time since its mishap, and Mr. Ding hoped to be able to make further tests. Various alterations in detail had been made, chiefly in regard to the streamlining, petrol-feed, and the stay-brackets. The recent heavy rain, however, had penetrated the tent in which the machine is housed, and after many ineffectual attempts had been made to get the engine going it was found that there was water in the magneto, and the tests were postponed until the following morning. Mr. Ding speaks very enthusiastically about the biplane, which he says is by far the nicest machine to fly he has ever handled. It is, by the way, the sole property of Mr. Bonham-Carter, a gentleman well-known in legal circles, who takes a keen interest in aviation. It is at present fitted with Mann propellers, but Chauvières are on order.

In the evening a dozen school machines came out and hopped about in what frequently seemed to be dangerous proximity. It was the first really good evening for about a week. Quite a large number of spectators remained till it was dark to watch the proceedings, evidently fascinated by the remarkable celerity with which pupils followed one another in turn, making "straights" with a precision born of necessity, for a trifling deviation would have meant trespassing on the preserves of some other school.

In the Beatty sheds is a new Caudron ready for its first flight. This makes the number of machines actually available for school work at this establishment no less than seven, so that, given fair weather, the pupils should be able to make good progress.

A new Beatty engine is also completed and ready for a bench test. The latest one of similar make gave 57.9 brake h.p., although only designed for 40 h.p.

A new Caudron type biplane two-seater, with 45-h.p. Anzani, has just been built by the London and Provincial staff to the order of Mr. Abbott. It made its first appearance on Monday. Mr. Abbott learned at the L. and P. school.—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast	Fine	Fine	Fine a.m. Wet, p.m.	Fine	Fine a.m. Wet p.m.	Wind & Rain	Fine
Hendon	Fair	Fair	air	Fair	Wet	Wet to Fair	Fine
Windermere	Fine	Fine	Wind & Rain	Wind & Rain	Fair	Wet	Fine

HENDON.

AT THE BEATTY SCHOOL OF FLYING, LTD.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger and A. E. Mitchell.

Pupils with instructor on Beatty-Wright machines: Messrs. Arbon (8 mins.), Banks (15), Bond (15), Boyle (9), Crossman (8), Delves (18), Eaton (15), FitzHerbert (10), Jones (30), King (10),



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MISCELLANEOUS.

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On Caudron machines: Messrs. Arbon (5), Banks (10), Bond (5), Coates (20), Collett (30), Davison (20), Fawcett (10), Goodfellow (60), Litton (10), Nicholson (28), Rutherford (32), Sampson (35), Smith (10), Spicer (20), Thompson (30), Tolhurst (43), Whincup (8), Willmet (20), Dickenson (10) and Stagg (28).

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Sunday, and 12 passenger flights were taken in the course of the week.

AT THE HALL FLYING SCHOOL

The following pupils received instruction during the week:—

With Mr. Stevens: Lieut. Raymond-Barker (30 mins.), Mr. Snowdon (57), Mr. Booker (26), Mr. Mason (45) and Lieut. Phillpotts (50).

With Instructors Cecil M. Hill and H. H. James: Messrs. Hamer (13), Bell (37), Yonge (20), Gordon (38), Gay (15), Hatchman (32), Russell (7), Bangs (22), Wilkins (20), Huggan (12), Goodrich (12), Millbourne (3), Punnett (10), Wenner (8), Watson (12), Furlong and Lieut. Jowett (22).

Mr. Minot, who took his certificate at this school, is taking extra practice while awaiting appointment to the R.F.C.

R.A.C. Certificates were taken by Mr. J. Furlong and Lieut. Raymond-Barker. Lieut. Raymond-Barker took his certificate in a satisfactory manner under very adverse weather conditions on his last day of leave, thus enabling him to transfer to the R.F.C. Mr. Furlong is still at school and had to obtain the Head's permission for time off for practice.

The following pupils are showing satisfactory progress: Messrs. Booker, Snowdon, Lieut. Phillpotts and Mr. Gay.

Will Lieut. Grant, who took his certificate at the Hall School last week, kindly communicate with the Manager at once?

Machines in use: Hall (Government type) tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Pupils with instructor on machine: Messrs. Crawford (20 mins.), Dixon (34), Fitzsimons (10), Perrins (10), Fenning (10), Boisson (22), Railton (20), Gardner (20), Mathewson (10) and Liddell (28).

Doing straights or rolling alone: Messrs. Sykes (8), Derwin (7), Hudson (9), May (10), Wallis (54), Mathewson (20) and Ball (8).

Machines in use: 60-h.p. R.B., 50-h.p. R.B. and 50-h.p. Caudron-type biplanes.

In addition to the flying practice received by pupils, many have taken part in the constructional department of this school, which department is now very flourishing.

Many passengers have been carried, a great number being officers, who seem to appreciate flying more than any other section of the population. The new R.B. machine is now climbing even better than before.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Barrington, Blake, Clifford, Dallas, Douglas, Hodges, Hume, James, Minifie, Murray, Penley, Pennington, Perham, Roach Pierson, Sievking and Wyllie.

Doing straights alone: Prob. Flt. Sub-Lieuts. Murray and Wyllie.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL CO.'S SCHOOL.

Instructors for the week: Messrs. Warren and James.

Pupils rolling alone: Messrs. Sargood, Frost, May, Burton and Welsford. Straights: Messrs. Everidge, Gunner, Conner, Sykes, Sykes, Scott, Jacques, Moynihan, Blackburne-Maze.

Eights or circuits alone: Messrs. Wood and Barton Adams.

Mr. Herbert L. Wood passed for his certificate on Wednesday, making a good, steady flight with remarkably good landings.

Machines in use: Three L. and P. tractor biplanes.

WINDERMERE.

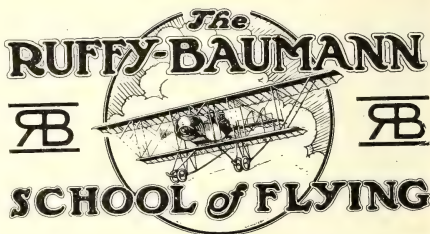
AT THE N.A.C. SEAPLANE SCHOOL.

Instructors: Messrs. W. Rowland Ding and J. Lankester Parker

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On Sunday Mr. S. J. Sibley completed first half of certificate tests, making exceptionally good landings, but wind stopped flying for the rest of day.

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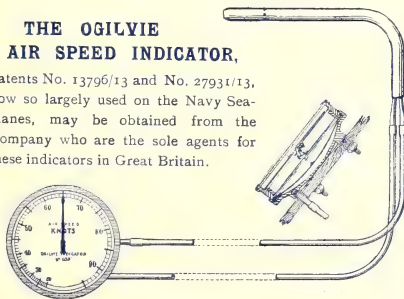
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WEDNESDAY, JULY 28, 1915

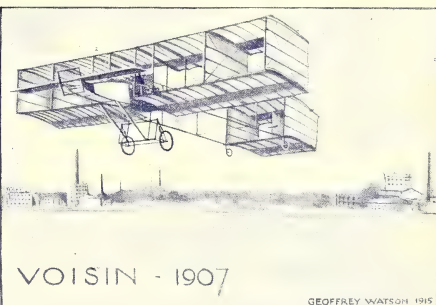
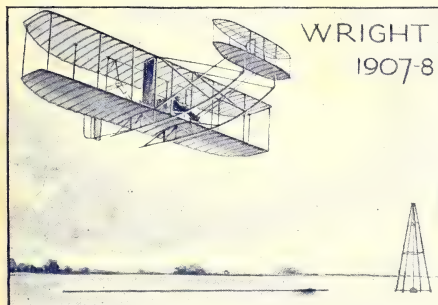
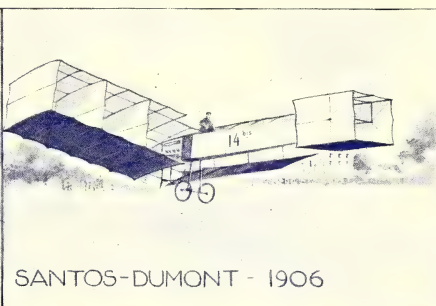
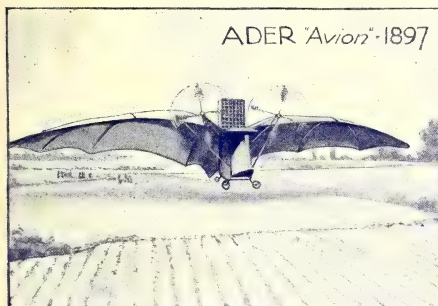
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Vol. IX. No. 4

ONE PENNY WEEKLY

[Registered at the G.P.O.
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MILESTONES.—I.



So many people are only now beginning to take an interest in aeroplanes that it is of interest to put on record the types of flying machines which have marked distinct steps in the progress of aviation. The first machine to fly—of which there is anything like authentic record—was the Ader "Avion," after which the more notable advances were made as shown above. A further series will appear in due course.

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ON PARLIAMENT AND THE FLYING SERVICES.

The various references to the Flying Services, more especially to the Royal Flying Corps, in the debate in the House of Commons on July 20th, on the Supplementary Vote of Credit, have been so inadequately reported in the Press generally that it seems fitting for this paper to reproduce them practically in full.

They show that those Members of Parliament who have hitherto interested themselves in Service aviation do not intend to be muzzled by those misguided people who hold that to criticise the present state of affairs is unpatriotic because those in high places are doing their best and should not be hampered in their well-meant efforts.

Nothing, in fact, could be more unpatriotic than to rest content with things that are bad, or with things that might be better. Nothing except the very best possible is good enough for those who are risking their lives in fighting the country's battles.

As concerns the Flying Services, nothing but the best possible aeroplanes in the greatest possible quantities is good enough, if the latest German machines are to be beaten. Therefore anything which will help to this end is truly patriotic, whereas those who would have us assume that everything is for the best in this best of all possible Governments are simply helping the enemy.

Except for the pluck and skill of the pilots and the efficiency of one or two departments which have the luck to have really able men at their heads, there is scarcely anything connected with the Flying Services that could not be easily improved, and until those improvements are completed criticism must continue.

In both Services the pseudo-scientific departments are either spoiling machines or delaying deliveries of aeroplanes by fiddling with unnecessary alterations or insisting on unnecessary refinements, or wasting time, money and productive possibilities by freak designs or futile experiments.

Apart from civilian departments, men capable of increasing the output of machines or pilots are wasted on routine work or trivial jobs which could be done just as well by men of inferior calibre.

Men of known incapacity are in positions where they do harm, and better men are wasted.

The whole organisation must be shaken up if maximum efficiency is to be reached.

It is true that in actual war both Services have done splendid work, but it is done in spite of things as they are, and not because things are as they should be.

Many senior officers know it, still a greater number of able men in subordinate positions know it, but they are not strong enough to get things altered. The inertia of officialdom and of service routine is too strong for them.

Therefore the only way to achieve any improvement is for those Members of Parliament who have identified themselves with aviation to refuse to be muzzled and to keep on hammering away as they have done in the past.

It is unfortunate that none of them has any technical

knowledge of aviation, or even the extensive practical experience that Mr. Winston Churchill has, and that they are consequently bound to rely on second-hand information for the groundwork of their questions.

But, even in this way, something may be done, simply because even if it can only be shown that the questioners are on the track of a particular mistake, or of a particular phase of official mismanagement, the faults may be put right before further crimes are exposed.

Let us, therefore, in the interests of all officers and men of the Flying Services, hope that some good may come of Parliamentary criticism, since all the powerful papers of the lay Press are either afraid to tackle the subject, or are utterly misinformed, or are engaged in whitewashing official actions.

The following reports are taken verbatim from "Hansard." Sections which do not develop or emphasise the argument have been elided, and remarks have been interpolated where comment has seemed advisable.

IN THE HOUSE.

The first reference to aircraft was made by Sir H. DALZIEL, who said:—

I should like also, if it is possible, the right hon. Gentleman to reassure us with regard to our aerial service. Is everything being done even now that ought to be done to make that service complete both for offensive and defensive purposes? There is a great deal of misgiving on that point, and if we can have any information I am sure it would be reassuring.

Later in the evening Mr. JOYNSON-HICKS said:—

I desire to make a few remarks on a subject in which I have been immensely interested for some years. I do not propose to indulge in destructive criticism, and I do not propose to indulge in instructive criticism, but if I can suggest some constructive criticism to the representatives of the Navy and the Army I shall feel that I have not spoken in vain. My justification for speaking this afternoon is a speech made by the Minister of Munitions a month ago, that is on the 14th June, only two days before I spoke in this House on this subject and only two days before the Under-Secretary of State for War gave us rather a glowing picture of our Air Service at the front. The Minister of Munitions, speaking, I think, at Bristol, said:—

"We want more aeroplanes. The Germans have many more than we have."

I said nothing quite as strong as that. The right hon. Gentleman went on to say:—

"One British aviator goes as far as two or three Germans, but we want more machines. The more you can turn out, the better it will be for our brave fellows in France."

The Field-Marshal Commanding-in-Chief said:—

"The Air Corps has become more and more an indispensable factor in combined operations."

The object of my speech this afternoon is to plead

for more aeroplanes, for more pilots, and incidentally for a larger type of aeroplane. The Air Service has, I admit, developed during the war, but the point I want to make is that it has developed along the old lines. It has developed along the lines of a year ago; it has not struck out, because I imagine there has not been, possibly, a man of sufficient imagination to seize upon the possibilities of the occasion, to examine the best brains in the Air Service, both of the Navy and the Army, to seize upon what might be dreams, and have them translated into action on the battlefields in Flanders or in the Navy.

[Here Mr. Joynson-Hicks strikes a very important point. The brains of subordinate officers and of clever men are not being properly used. Chiefly because of jealous superiors.]

From the reconnaissance point of view our Air Service is perfect. It is not necessary for me to say that the men are perfect; that is admitted on all hands. There are no aviators in the whole world, even those of France, who are better than our aviators.

I have had an opportunity, as no doubt other hon. Members have had, of speaking with officers both of the Artillery and of the Infantry and of the Air Service who have come back from the front, and it is generally admitted that in Artillery warfare good ranging is entirely the result of efficient aeroplane service.

Almost everyone who comes back from the front says that invariably the presence of German aeroplanes hovering over our trenches is followed by a burst of high explosive shells with a nicety of range which was absolutely impossible to the Artillery service three or four years ago.

It is quite true, as the Field-Marshal Commanding-in-Chief said in his last report:—

"During the last two months there have been sixty air battles between individuals, in which our airmen have been universally victorious."

I think he said that we have not lost a single man in these sixty air battles. I am quite prepared to agree as to the superiority of our airmen. One knows that there have been individual contests, and one realises that owing to the superiority of the English flying men rather than the superiority of our aeroplanes we have come off victorious. But we have not by any means kept the German aeroplanes off our lines. If we had done that we should have kept back the German Artillery from shelling our lines as they have done. I am prepared, on the authority of Artillery officers, to go so far as to say that to-day the German Artillery, so far as shelling new positions is concerned—of course they have the range already on existing trenches—would be blind if we could completely chase the German aeroplanes off the field.

[Here again is a very important point. The fighting aeroplane advocated by General Henderson years ago has never yet been produced by official endeavours, and independent efforts have not been encouraged.]

When we realise to-day that any general, English or German, can with motor traction, say, with a couple of hundred motor omnibuses or a corresponding number of motor lorries, move in one night some thirty thousand or forty thousand troops a distance of thirty or forty miles, we see that it is absolutely essential that our Air Service should be so perfect that it could prevent the concentration of the German troops in any given area during a night like that, first, by an offensive attack while they are being concentrated in a given position, and also by

giving our own generals accurate knowledge of where those troops are to be concentrated.

While I am speaking of the reconnaissance side of the aeroplane work I should like to plead with the Under-Secretary of State for War that some recognition should be given to the work done by the observer. The aeroplane observer to-day is almost as important, if not quite as important, as the pilot. He must be a trained soldier, sitting side by side or in front of the pilot of the aeroplane, who can distinguish unit from unit, can discover the batteries of the enemy, carefully hidden as they always are, and can make his report in a concise and military manner to the general as soon as he gets back. There is, I know, a feeling among the observers, who are, I think, about the same number as the pilots, that they might have the badge which is given to these, or a similar badge, to show that they have been risking their lives in the same way as the pilots, and have been performing services to the Army as great as the pilots.

[This is really rather a sound idea. Pilots wear wings to indicate that they have passed C.F.S. tests. Observers who are not pilots might well have some distinctive badge also. For instance a pair of binoculars (?)]

What I want to find out is whether during this year of war there has been such an improvement in the Air Service as will show that there is a possibility, either on the spot in Flanders or in England, of taking hold of the matter and developing it not on the old lines but on new lines. When I spoke a month ago a reply was made by the Under-Secretary of State for War. All he was able to say, and he seemed pleased to be able to say it, was this:—

"The Air Service is in very good proportion indeed to the rest of the Army. What I want the hon. Member to realise is that since the outbreak of war there has been no smaller expansion of the Air Service in proportion to the rest of the Army. On the contrary, the expansion of pilots has been in a ratio of ten to one. Where we had one before we have ten now engaged in the Air Service, while the expansion of men generally is in the proportion of five to one."

I am not a hostile critic. Everybody knows that I want to help the Air Service, but I think that that shows that the right hon. Gentleman has only got a conception of the possibilities of the Air Service such as we all of us had twelve months ago. He comes down to the House and says that the hon. Member for Brentford ought to be satisfied because he showed an increase in the Air Service of ten to one. But during the last twelve months we have increased our forces at the front—in Flanders, and certainly if we include our forces in the Dardanelles—by ten to one, and all that the right hon. gentleman is able to assure the House is that we have increased our Air Service in proportion, and only in proportion, to the increase of our troops at the front.

Those of us who have realised two or three years ago the possibilities of what could be done by an air service think that instead of being pleased that we had increased our Air Service by ten to one the right hon. Gentleman should have been able to come down to the House and say that our Air Service to-day is entirely different from any conception which we had on the matter twelve months ago.

But there has been no real development in the Air Service and in the possibilities of what the Air Service can do. But there has been no real conception of the possibilities of aerial offence out of all proportion to what were considered its possibilities twelve months ago. The right hon. Gentleman

went on to tell us that the question of pilots depended very largely on the question of schools, and we have, he said, eleven schools to-day instead of one at the time of mobilisation. That is quite true, but I think that I am right in saying that some of those schools which we have to-day really existed before twelve months ago. They were independent schools which were open, and they have now been converted into Government schools. The schools were there turning out pilots, and they are now turning out Government pilots. Those schools can be extended. I am prepared to say, from conversations which I have had with airmen in high position, that it is possible to make more pilots than we are making at the present time.

[This is perfectly true. Private enterprise will find money, machines, and more aerodromes if the Government will merely guarantee to supply pupils at a reasonable figure, and will remove military restrictions as to the locality of new schools.]

The first essential which must be observed to-day is to be careful that those pilots are turned out thoroughly experienced. I do not want to say a word which would give any information to our enemy, but after Debates which have taken place in this House on the subject of munitions, and after the exposures which have been made with regard to munitions without doing any harm to our cause—indeed, doing benefit—I think that there is no harm in making one or two statements with regard to the training of our pilots. I have heard, from the front, of a pilot who went over trained after six weeks, and the whole time that that man had been in the air was five hours' flying before he went over to France, and there was rigged out with a machine and provided with an observer to go on the machine with him, whose life was placed at the disposal of this man who had only been five hours altogether in the air.

I have heard of another who had been only three months in the school, and eleven hours in the air. That surely must come from a shortage of machines in our schools. What is wanted is that the Government should deal with this matter of machines in the same way as the Minister of Munitions is dealing with the question of munitions, so as to turn them out not in dozens or in hundreds but, if necessary, in thousands.

[And it can be done quite easily if ordinary common sense is used.]

Though our men are so good, I am bound to say that our engines have always been the weak place in our Air Service. There has been a great difficulty in getting sufficient engines, and engines which will make our machines powerful enough to rise sufficiently high and sufficiently rapidly to cope with the German machines. Only this week a pilot from the front told me that he had to fly a machine—I will not say the height to which it will go, though I will tell the right hon. Gentleman afterwards, if he likes, but he could not get it up as high as those of us who know the possibilities of aeroplanes know that he should be able to get it to go. That machine should have been sent back—it probably has been by now—from the front, to be thoroughly overhauled.

[The old complaint of keeping machines at work after they are due for overhaul, because the flying must be done, and there are not enough machines to do it, so the poor old soggy planes have to go on flying.]

Then, apart from the question of pilots, we have not got enough machines for the use of the pilots. By machines I mean good, first-class machines, in every way adequate to enable the pilot to carry out the

duties entrusted to him. I know the number of machines that were at Salisbury Plain, on the occasion of the review, some two months before the war began. I will not mention the number to the House, but the right hon. Gentleman knows it.

[The German and Austrian attachés were there, and if their eyesight was normal, counted about 30 or 35.]

But even if we had ten times that number we have not got enough machines at the front. The loss of machines in a war of this kind is bound to be enormous. I do not think I would be far wrong in saying that our Air Service has lost a machine per day, if we include all the machines which have been damaged or broken up in the course of this war. All that has to be provided for. All that wastage has to be made up.

There is a very remarkable sentence, which I would not have quoted if it had not been made public in the Field-Marshal's last dispatch. He says:—

"We have been indebted to our Allies for supplying us with aeronautical material without which the efficiency of our Royal Flying Corps would have been seriously impaired."

That means that there was not a sufficient supply of aeronautical material from this country at the front, and if our Allies, the French, had not come to our assistance the efficiency of the Royal Flying Corps would have been seriously impaired. Surely, the Minister of Munitions, or somebody, is required to take that matter in hand.

[And very many of those machines are of types which the French do not want, as they have been condemned as unsuited for military use.]

Then there is a lack of fighting machines. It may be that reconnaissance work has been done as magnificently as it is possible to do it, but where calculation has been lacking with regard to the Flying Corps has been in the direction of seeing what could be done with large fighting machines, and in providing our aerial corps with a sufficiency of fighting machines. Zeppelins can only be kept away, as everybody knows, by aeroplanes. They cannot be kept off our shores by anti-aircraft guns or large guns. They fly at a height of 10,000 feet, a height at which no gun can touch them.

[That is, presumably, no gun but a German gun, for the German "Archie" is good for considerably more than 10,000 feet, though his shooting is then a trifle erratic.]

Of course, aeroplanes can get above them. The unfortunate Lieutenant Warneford got above a Zeppelin and put an end to it with a comparatively small bomb of twenty pounds. That was done because of the absolute intrepidity, fearlessness and skill of Lieutenant Warneford, and also because he had a machine which could rise rapidly and get above the Zeppelin, whose destruction then ensued.

[It may be well to note that he met that Zeppelin by chance when already high up, and did not start from the ground when it appeared. Still greater climbing power would be needed in such a case.]

Why is it that there have been no Zeppelin raids here during the last month? Some people have been wondering why? The Chancellor of the Exchequer says, "Tell us why?" I will tell you.

Mr. JONATHAN SAMUEL: Keep your secret.

Mr. JOYNSON-HICKS: I think that it will do no harm. It is known to the Germans.

Mr. MACPHERSON: Keep it quiet.

Mr. JOYNSON-HICKS: It is a reason connected with the efficiency of our Air Service in Flanders.

Mr. SAMUEL: I am living on the North-East coast. Do not divulge anything that might bring them there.

[Mr. Samuel is, presumably, a humorist of the Mid-Victorian type.]

MR. JOYNSON-HICKS: I should be very loth that any injury should result to the hon. Member from any indiscretion of mine. What I am asking, both in the Naval and Army Air Services, is that there should be immediately provided a sufficiency of powerful fighting machines in order that the Zeppelins may never start from the other side of the North Sea. Then, I think, the hon. member will be perfectly safe on the North-East coast.

The Navy has, of course, charge of the safety of our coasts. There is no reason why there should not be an air station at least every forty miles along our Eastern and South-Eastern coasts, with, say, twenty scouts and twenty fighting machines.

[The R.N.A.S. lives in hopes of such plenty.]

Why cannot we have more fighting machines? We can get them from America, and in saying that I am making no statement which could afford any benefit to the Germans. I have taken the trouble to read the American newspapers on the subject during the last few weeks; I have found full particulars of what the Americans have done in regard to aeroplanes, and I submit, from information I have, that they can do more. They are untrammelled by the ideas of twelve months ago, and we can realise what could be done by a gigantic aeroplane service taking the offensive against the Germans.

[We could produce them in England if it were not for the meddling of civilian officials who have their own axes to grind, or freak ideas of their own to exploit.]

I do not want the Minister of Munitions to take the matter up; I do not think it is necessary. I have seen it stated in various newspapers that it is desirable that there should be a Minister of Aviation. I do not think it is necessary. I want to see whether either of the big Departments represented here is responsible for the supply of aeroplanes to the Army and Navy. The hon. Member for Clare tried to find out whether the supply of aeroplanes is under the Minister of Munitions or the Under-Secretary of State for War and the First Lord of the Admiralty. Are they responsible not merely for the supply, but for deciding the number that can possibly be utilised?

If there could be continuous raids—which there cannot be, of course, unless we have a greater supply of pilots and aeroplanes than we at present possess—if there were continuous raids, I do not mean sporadic raids, but continuous raids of some four or five hundred aeroplanes dropping bombs on the Rhine bridges and the great Krupp factory at Essen—

MR. BOOTH: On a point of Order. I wish to ask you, Sir, whether the hon. Member is right in discussing matters of strategy and whether you consider it wise that the Government should make any reply. If so, what is the position of hon. Members who do not like to hear these questions discussed?

MR. SPEAKER: I am afraid that I have no inherent powers to stop these remarks. I hear a great many things said in the House which I think unfortunate, but I regret to say that I have no power to stop those statements. It rests with the Government, or any Member of the Government, to say that these matters had better not be discussed, and, if that be done, I am sure that the hon. Member will not persist in his remarks. The responsibility rests with those who know what should not be discussed.

MR. JOYNSON-HICKS: I need hardly say that if the Government say that this is a matter on which there should not be discussion I will not continue, but, in

justice to myself, I think the House will realise that I have not made a single statement which has not appeared in the public Press during the last few weeks. I think everything I have said has appeared in the public Press.

THE UNDER-SECRETARY OF STATE FOR WAR (MR. TENNANT): Perhaps I may be allowed to say that there are certain criticisms and suggestions which have been made by the hon. Gentleman in the course of the observations which he has addressed to the House, to which I am able to reply, but there are certain other points to which I am certainly unable to reply, from the nature of the case, and the House might be the first to reprobate any answer which it thought ought not to be given. Therefore, I think, the hon. Gentleman will be wise if he tried to circumscribe his remarks within the area in which reply is possible.

[The whole of this dialogue is an excellent specimen of the futile way in which highly paid legislators do not earn their money, and indicates the mental level of the modern Parliamentarian.]

MR. JOYNSON-HICKS: I need hardly say that I will follow the suggestion of the right hon. Gentleman; I will not go into details; I do not in any way want to go into details which would afford our enemies the slightest help. But if hon. Members who interrupt have read the newspapers I think they must see that I have said nothing which has not already been published. The object of my speech is to get the Government to realise the enormous possibilities that there are in our Air Service from a fighting point of view.

We realise all that they can do from the reconnaissance point of view. The Air Service—and this is known to the public and therefore can do no harm—aided our ships in the destruction of the "Königsberg."

There was also the naval episode, well known to everybody, namely, the destruction of a transport in Turkish waters by the guns of the "Queen Elizabeth." The right hon. Gentleman knows that there is no harm whatever in our knowing that the "Queen Elizabeth" destroyed a Turkish transport at a range of 18,000 yards. That was done by our wonderful modern gunnery without the "Queen Elizabeth" seeing the ship she was aiming at, or the sea upon which that ship rode, and it was due entirely to our Naval Air Service being able to communicate with the "Queen Elizabeth," and show exactly where it was that she was to direct her fire.

MR. JONATHAN SAMUEL: It seems that the hon. Gentleman is really giving important information, or I may put it that the hon. Member is concentrating this information in such a way that he is really risking the lives of aviators in future when they go up for scouting purposes. I think it is very unwise to place this information before the House of Commons.

[Can anyone in their sober senses imagine a responsible person of mature age making a more absolutely inept remark? Germans on active service would have to be of the mental calibre of the average M.P. if they could not see all this for themselves.]

MR. JOYNSON-HICKS: I can assure the hon. Gentleman that it is not so. I speak not merely as an independent Member, but I am convinced that I speak largely on behalf of the Aeroplane Service, in asking the Government to give them greater facilities for the work which they believe is in their power. The Air Services, both of the Navy and Army, are convinced that there are possibilities of offensive warfare in the air that were not dreamt of twelve months ago. What I desire is, and what I am sure they desire is, that the Government shall appoint some

man of imagination and power and leisure, a business man, who would get hold of the heads of the particular Air Services, and would say to them, "What do you want, not on the lines of present development, but what do you dream of as possible? What do you dream of, in your imagination, as to what the Air Service really can do?" The war, I believe, may go on for some considerable period longer, and there is time to develop our Air Service, time to create more pilots, time for you to complete those large aeroplanes of which we have read in the newspapers, and of which the Under-Secretary of State spoke only a few weeks ago in this House.

[All of which is by no means as fanciful as the words in which the ideas are expressed.]

I believe in the Air Service as an offensive measure against the Germans, and as a means of turning the German flank in Flanders—large and powerful aeroplanes dropping bombs on the Prussians' lines of communication. I believe in the Air Service as the best means we have, in future, of coping with submarines. I ask the House to believe, if they think I have offended in any way, that I am in earnest in this matter. I am convinced that the success of this war can be achieved by a large Air Service developed as an offensive force. I believe that if the Government took this matter in hand, and appointed some business man as the head of the aeroplane services, he would accomplish what the Minister of Munitions has done for artillery, and I hope the Government will deal with this Air Service, from the offensive point of view, in a frank and energetic way.

[A business man at the head would merely confound confusion. The right men are already inside the Services if they could be given free hands. But Heaven save us from any more civilian officials. "Business men" are doing pretty well out of this war already. We do not want too many financial scandals when the dirty linen has to be washed.]

The PRIME MINISTER: I am bound to add with reference to the speech about aviation of the hon. Member for Brentford (Mr. Joynson-Hicks) to which I also listened, I cannot at all agree that because those statements have appeared in newspapers that he, as a Member of Parliament in a responsible posi-

tion of authority, should think that is sufficient justification for making those statements here. A statement made in this House goes out to the world with a very different amount of authority from anything that occurs in the Press.

[Which seems to indicate that the "world" has even less common-sense than the average newspaper reader.]

Mr. JOYNSON-HICKS: A great deal of what I said was included in an article written by me for a newspaper and passed by the Censor; therefore I thought I was amply justified in assuming that, as it had passed the Censor, there was no objection to my making the statement here.

The PRIME MINISTER: Then when the hon. gentleman refers to the Press as his authority, he is referring to himself.

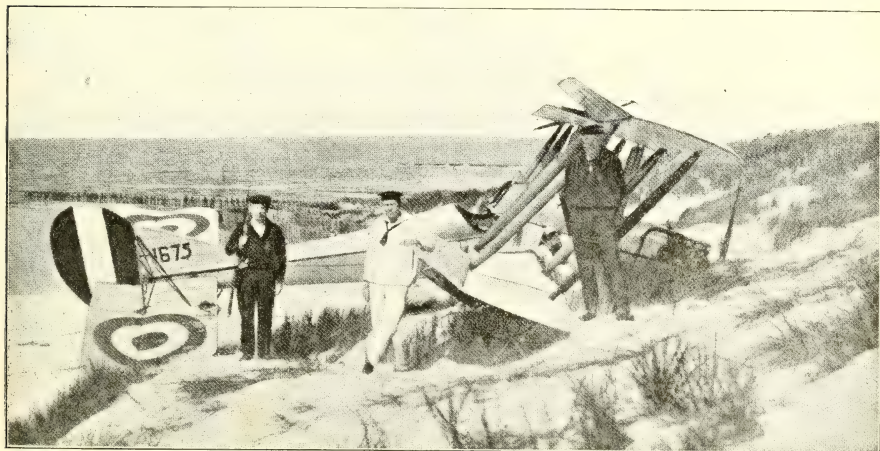
Mr. JOYNSON-HICKS: Again, I think the right hon. Gentleman is hardly fair. I did not refer to the Press as my authority; I merely referred to the fact that statements which had been made by me had appeared in the public Press. I did not say that the Press was an authority; far from it.

The PRIME MINISTER: I will not pursue the point; I will leave it where it stands. I am not complaining in the least of the hon. Gentleman. What I say is that, when we make statements here, they are in a very different position from those which under the censorship, such as it is, are allowed to appear in the Press.

[Oh! the utter, miserable futility of all this "back-chat"—there is really no other word for it. And these are the people on whom the lives of sailors and soldiers depend!]

The PRIME MINISTER: One word with regard to the point raised by the hon. Member for Brentford (Mr. Joynson-Hicks), who spoke as to our aerial equipment I am sure the hon. Gentleman will not think that I am treating him with disrespect if I say that everything he said as to the supreme importance of this particular branch of our military and naval equipment is not only true—obviously true—but is realised to the fullest extent by the Government and the military and naval authorities. [Then why not act up to it?]

On behalf of those who are responsible for the organisation and development of this magnificent



AN INHERENTLY STABLE LANDING.—A B.E.2c. interning itself in Holland, and neatly demonstrating the fact that a life boat is not proof against a lee shore.

branch of our fighting services, than which none has distinguished itself more in the course of the war or realised more satisfactory results, I must say that I think any suggestion that there has been want of imagination in conception, or of readiness in the application and adoption of new inventions and new processes, or lethargy or slackness in the enlistment and training of pilots and skilled observers, is totally unfounded, and not in the least in accordance with the facts.

[Unfortunately, Mr. Asquith has less technical knowledge than any of his critics.]

I do not believe there is any Department either in the Army or the Navy where these qualities of imagination, adaptability, elasticity, and assiduity have been or are being more conspicuously displayed. I do not believe that our service is one whit behind that of any other of the great belligerent Powers. Speaking with knowledge and authority, I say that, at this moment, it is being developed and expanded in every possible way under the best auspices and the wisest guidance.

[Presumably the staff of the R.A.F. and those of kindred kidney, who very nearly succeeded in extinguishing all the pre-war aeroplane factories.]

Mr. LYNCH: I wish to say a few words on two topics, aeroplanes and inventions, one of which—that of aeroplanes—has been somewhat exhaustively dealt with by the hon. and learned Member for Brentford. With regard to aeroplanes, I would simply indicate on broad lines what seems to me a possibility. I think this country is very fortunate in regard to the question of war in the air that the German mind is at present hypnotised by the Zeppelin idea. The Germans have been buoyed up with great hope and great faith, perhaps unwarranted, as to the possibilities of the Zeppelin, and, in spite of repeated failures, they have persisted in the work of constructing Zeppelins. If they had been entirely free from that obsession, and if they had devoted their minds and their high scientific, technical knowledge to the question of building aeroplanes, I think they would have seen possibilities which they would have developed, and which would have finally made their aeroplane service enormously more formidable than the Zeppelins.

The hon. and learned Member for Brentford (Mr. Joynton-Hicks) has pointed out certain possibilities of the aeroplane for the purpose of reconnoitring and scouting and also as a striking force. It is only necessary to indicate that all the elements of the problem have been separately solved, and all we need do is to combine them in order to assure ourselves that we have the possibility of building a great force which will secure for us the complete dominance of the air. All the main elements of this problem have been separately solved, such as the question of how long aeroplanes can remain in the air, the distance they can traverse, the power, speed, and rising faculties, the bombs they can carry, the machine guns they can carry, and even the wireless services they can man.

The only difficulty that now remains is the psychological difficulty—that is to say, the difficulty of convincing the authorities that here is a question the proper handling of which indicates the true line of safety and ultimately the line of victory—so to seize their minds with that faith or conviction that they will throw themselves with the greatest energy into this problem of building aeroplanes, so that once and for all we may attain the conviction, even before we actually realise it, that this country and its Allies mean to obtain complete dominance of the air.

With regard to the uses to which a strong striking

force of this kind can be put I will indicate one, namely, in regard to that most difficult of all questions—the proper means of defence against submarines. I think there are two ways in which aeroplanes can operate so as to greatly limit the danger of submarine attacks. I believe—but I will not give details—that in the development of our aeroplane service lies the possibility of solving that problem.

Before leaving this particular question I would like to refer to one point made by the hon. and learned Member for Brentford in regard to what he said about a separate Department for aeroplanes, and particularly a Ministry of Aeroplanes. I am inclined to think that this has almost become a necessity, because there is a very great difference in the way in which any particular subject is tackled; if, on the other hand, it is left to a sub-department of a great office, it is not so efficiently dealt with as if it be left to an entirely new Department filled with new energy, and possessing great officers of State. They generally have the faculty of magnifying the importance of their own office. That would be a distinct advantage, because once this work is undertaken it ought to be pressed forward with the greatest energy and vigour, so that in the shortest possible space of time this country and its Allies would in this respect be in a position of enormous advantage.

The great operations on the Western Front have up to the present resulted practically in a stalemate, but an enormous and speedy development of our aeroplane service might turn the scale of that balance and secure victory for this country.

Speaking on the subject of Inventions in general, Mr. Lynch said:—

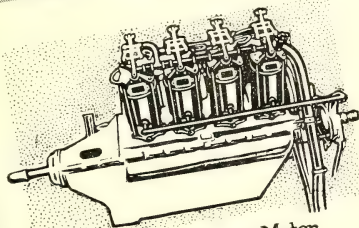
We might retain the Commission which has already been chosen—[i.e., Lord Fisher's Commission, which, according to present indication, is not likely to be of much use.—C. G. G.]—to perform the final work of advising, at the same time giving free scope to subsidiary Commissions in order to prepare the work and submit various feasible and practicable suggestions which have been worked upon by their brains and brought to the most feasible and practicable shape. Since I took up this question I have been inundated with letters and suggestions which have even induced me to sympathise with the War Office itself. It seems to me that inventions can be divided into three classes. Some of them are inspired, others inspired idiots; and the third—well, they are not inspired, and they are by far the largest class. It is precisely the suggestions of that class which this preliminary Commission could eliminate and finally conserve.

[A very sound idea. At present certain executive departments seem to collar the good ideas themselves and pass along the uninspired idiots' notions to the aforesaid Commission, which may perhaps be quicker, after all.]

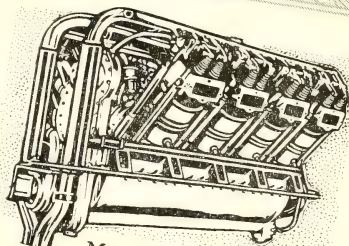
In order to show that this point is of some importance I will indicate one or two successes in this respect which have been achieved in France. One is the scheme of dropping innumerable showers of darts or arrows from aeroplanes, which have done considerable damage to the enemy, although some means of defence against them have been found by the Germans, and the Germans have shown us the sincerest form of flattery by imitating this method. Another point touches the investigation which is now proceeding and which is at the very point of being realised respecting an explosive bomb of far greater power than anything that has yet been used in the course of this war. This is now being actively worked upon by the best scientific brains in France, and I believe it will soon be a great factor in this

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war, and it may have an enormous influence upon our operations on the whole lines. I will not name the bomb, and still less will I refer to its constitution, but I can assure hon. Members that it will become practical in the course of this war and if it does become of enormous benefit to our Allies it will be as the child of this Commission of Inventions to which I have referred.

I would also, in order to stimulate my right hon. Friend (Mr. Tennant), indicate what has been done by the other side. We have a notion in this country that the Germans are very methodical and scientific, but that they are somewhat unimaginative and slowly adaptable to new ideas. The notion is not true. The Germans have even, during the course of this war, shown wonderful adaptability, although I do not think that arises from any particular lightness or imagination of their mind; but from the fact that they have been so imbued with science that they follow resolutely, and as a matter of course, the indications of science. And so, proceeding on these lines, they have reached the same results as those who were less scientific but more endowed with an imaginative faculty.

The Germans were beginning to run short of the raw materials for their high explosives. They took a method, which until recently had been hardly more than a laboratory method, or a matter of experiment shown to students; having seen the necessity they launched out with great energy and decision, and they converted this into an enormous industrial work. Thus, they have completely obviated one of their greatest difficulties, which was the shortage of material for nitrates, nitric acids, and so forth, which is one of the forms of raw materials for the various high explosives.

Although the Germans have done very many wonderful things during the course of this war, or even during the last six months, I do not think there is one instance where they have really originated a new method, or seized upon an entirely novel or original idea. I believe that most of the instances that I have quoted, and I could extend them, have come from the French side, but the Germans have shown an adaptability which arises from high scientific training, and, of course, common sense, in using these methods which are indicated by science, and, once the way is pointed out, in striking determinately into that way.

I would conclude by drawing this moral, and saying, in the case of aeroplanes especially, the way has been indicated. The principal difficulty is not one of material but is a psychological difficulty, and I hope that there will be a great pressure of public opinion, if nothing else, brought to bear upon the War Office, so that they will be led—I will not say compelled—into this way of taking a leaf from the Germans themselves, and, once having seen that clear way to victory, may they strike into it with the utmost resolution, vigour, and energy, so that within a comparatively short time the Under-Secretary of State for War will be able to announce to this House that the question of the predominance of the air has been solved and that no German aeroplane dare show its nose within a certain area which is under the control of the aeroplanes of the Allies, and that this great arm is not only performing functions of scouting and reconnoitring work of all kinds, but that it has also become one of the most powerful and striking arms of the Forces of the Allies.

[A very sensible speech, such as one might expect from a practical-minded Irishman who has seen the British Army as an enemy as well as a friend.]

Mr. TENNANT: The hon. Gentleman who has just sat down suggested that the real difficulty in connection with the supply of aeroplanes for the Government and the Army was a psychological difficulty. I should like to disabuse him of that idea at once. It is wholly unnecessary to bring pressure to bear upon the War office in order to convince us of the importance of the Air Service. Those matters have been considered, as I say, by the best brains in the Army, by the best mechanical brains that we could obtain, for many months past.

[Presumably the best brains the R.A.F. can provide, which is not saying much since Mr. Busk died and Mr. de Havilland left. The best brains among aircraft engineers have not been consulted at all.]

The responsible authorities have been considering all these questions as to the increase as rapidly as possible of the Air Service. I am sure the hon. Member would not expect me to make an announcement as to what steps have been taken—it would not be proper that I should do so—but a policy has been decided upon, and that policy is being carried out as rapidly as it possibly can be.

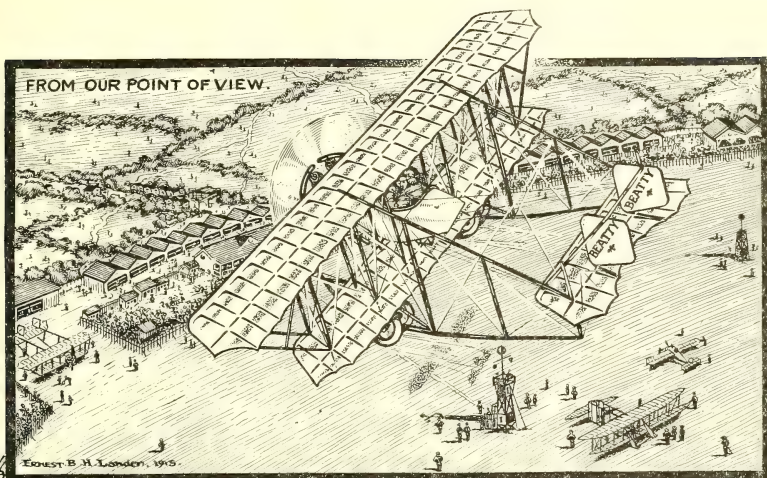
[The policy may be, but the production of aircraft and pilots is not. I can put the authorities in touch with men who can quadruple their output of both in six months.]

I was asked more than a month ago in this House to state some of the steps which were being taken in order to carry out that policy. I then indicated that one of the most important of them—I am sure the hon. Member will agree with me that it is one of the most important—was the increase of the number of training schools for pilots. Of course, we cannot have an indefinite increase in the number of those schools without a very large increase in the machines with which to teach the pilots. The hon. Member for Brentford (Mr. Joynson-Hicks), in the course of his observations, stated that while it was true we had increased our training schools from one to eleven we had only taken over a number of the civil flying schools. It is not at all in accordance with the fact to say that is all we have done. While it is true that we have taken over two such civil schools, we have increased our original one to eleven.

[In doing so the War Office closed not less than six civilian schools, and confiscated two aerodromes, at which the output of pilots might be much greater.]

The hon. Member for Brentford again referred to the time which it took to replenish the depredations caused by accidents or by gun fire upon our aircraft. With regard to the losses, I would say that the wastage, of course, has been very large, as I dare say the House knows. Again, I cannot go into figures, but they have been all made good, and an enormous number more have been supplied.

The only other point which strikes me, and on which I think it is desirable that some statement should go out from the War Office, is the question of the height at which aviators fly. I think the hon. Member stated that one officer was put into a machine which could not climb and was probably exposed to great risk, and that we were giving orders which were calculated to be very dangerous to our flying officers. I wish the hon. Gentleman and the House to realise that there is a definite minimum height below which officers are not allowed to fly across the German lines, and any officer or man who crosses the German lines at a height below that minimum is contravening instructions. I am bound to say I do not believe that it is ever done, and if it has been done it is possibly an isolated instance of someone who has done something which he ought not to have done.



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[That is doubtless the official view, but ask the flying officers what is said to them if they come back and report that their machines refuse to climb. Are they never strafed by senior officers for fumbling?]

I do not know whether the hon. Gentleman complained of the fact that there were not sufficient non-commissioned officers and men in training, but that is one criticism which has been made. I would say that we are training many more non-commissioned officers and men now. The reason for the temporary abandonment, not the complete abandonment, but the diminution in the number being trained at one time, was that it was found that non-commissioned officers and men were very extravagant in aeroplanes, and we had not a sufficient number of aeroplanes to allow them to make experiments.

[Simply because the wrong men were selected.]

If I may just for one moment, I will turn to what the hon. Member for West Clare (Mr. Lynch) said upon the question of inventions. He is, of course, aware of the Committee of which Lord Fisher is chairman, who will be able to co-ordinate all the inventions which come before them. Prior to the appointment of that Committee, there was at the War Office—and I presume there was at the Admiralty—a very efficient body. I can only say, in conclusion, that the formation of this Committee ought to give the House and country confidence that the production of these fertile brains, which are brought before us from time to time, will receive, not only most careful examination and consideration, but will be investigated by men of the most eminent knowledge and scientific attainments themselves.

[But who have no knowledge whatever of aircraft and who will simply call on the R.A.F. and the N.P.L. for opinions and advice, and so will merely extend the Official Mutual Admiration Society.]

Mr. RONALD MCNEILL: I regret that the right hon. Gentleman did not take the opportunity of removing the false impression which was given to the House, I am sure quite unintentionally, by the Prime Minister. The Prime Minister, replying to my hon. Friend the Member for Brentford, at the end of his speech, left the impression on the House that my hon. Friend had indulged in a criticism, not to say an attack, upon the Flying Service of this country.

[It was only one of those little theatrical displays of righteous anger which the Prime Minister finds so effective as a method of disarming too shrewd criticism.]

I am sure that those who paid attention to the speech of my hon. Friend must have realised that, so far from that being the case, he very strongly eulogised the Flying Corps and the Aviators who are at the disposal of the country, and that he only made the criticism, which neither the Prime Minister nor the Under-Secretary has so far satisfactorily answered, as showing that the Government, having this magnificent body of men at their disposal, have not yet fully realised the full purposes to which that new branch of the Service might be put if it were developed to the utmost capacity to which science can now develop it.

[Dear man! It is not a question of science, it is merely common sense that is required.]

I am not competent, as is my hon. Friend the Member for Brentford, to deal with the technicalities of the Flying Corps, but there is one small aspect of it to which I should like to refer, because it goes in the direction of showing that the criticism of my hon. Friend was justified. A very important branch of the Flying Service is the instruction of our pilots and observers. If my information is correct—I have no reason whatever to doubt it—the type of aeroplane

which is being employed, or rather one of the types being employed for instruction at the present moment, is the Blériot monoplane. As long ago as 1912, in consequence of a fatal accident which occurred with that type of machine, an order was issued by the War Office that the Blériot monoplane was not to be used for the purpose of instruction. Only on the 22nd June in the present year another fatal accident occurred with that particular type of machine. It is recognised, I am told, by experts, as being the most dangerous type of aeroplane, and it has certainly been superseded by later types of the biplane, the machine which I believe is used at the front. I do not know for what reason this dangerous machine is still used for the purpose of instruction, unless we are short of proper machines.

Mr. TENNANT indicated dissent.

Mr. MCNEILL: The right hon. Gentleman indicates dissent. Then I am entirely at a loss to know why it is. It is extremely wrong that this machine, which has been condemned as being dangerous, should be used at present, as I know it is being used in more than one school of instruction for the instruction of our pilots, therefore needlessly endangering their lives in acquiring the knowledge of what at the best is a very dangerous service.

[Where Mr. McNeill got his information is a bit of a mystery. There are faster fliers and better climbers than the Blériot, and so the machine was condemned as not being suitable for military purposes, but it is far from being "most dangerous." There are several other machines in use both by the French and English which are worse built and more dangerous to start and land, and the Blériot has a much cleaner record, so far as breakages in the air and fatal accidents are concerned, than the products of the Royal Aircraft Factory, in proportion.]

Following on these speakers, Sir A. MARKHAM, in a speech which under ordinary circumstances would be an impeachment of the whole Government, said:

These people who answer Parliamentary questions take a kind of fiendish delight in saying that they have successfully evaded questions in Parliament. My right hon. Friend the present Under-Secretary of State for War is becoming an adept in the same art of evading the main issue by some humorous remark which takes the House away from the question to which an answer is desired. There is nothing more difficult than to get out the truth in answer to a question. Mr. Speaker, in his wisdom, says that a Member must have only three or four shots, and as a rule we do not get those. A Minister is generally able to evade the question.

[Which is just what this paper has been trying to prove to its readers for years. Mr. Tennant has indeed proved a worthy pupil of Colonel Seely (T.F.) But if one regards questions as statements and ignores the official evasion one gets very near the truth.]

The daily Press cuts out by far the greater part of the criticism levelled in the House against official incompetence, and I strongly recommend people to buy "Hansard" and read the speeches verbatim.

So far as aircraft are concerned, it is a pity that no one in the House has any practical knowledge, for such a person could simply turn Mr. Tennant inside out in five minutes. If Mr. Churchill would only throw up his Government post and become the leader of the Government's critics, I believe he could raise such a storm in the country as to attain in a short time the position of leader of the House of Commons himself, with possibly a Peer as Prime Minister. Then we might get things done which under the present system seem unlikely to be done.—C. G. G.

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GREAT BRITAIN.

From the "London Gazette," July 20th, 1915.

ADMIRALTY, JULY 15TH.

In accordance with provs. of Order in Council of May 13th, 1901, undermentioned now a temp. flight commander, and formerly a lieut. in Navy, placed on emergency list as lieut. com.: C. Hornby. Seniority, December 31st, 1909.

JULY 17TH.

ROYAL NAVAL AIR SERVICE.—Actg. Flight Lieut. L. D. McKean confirmed in rank of flight lieut., May 22nd.

Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut.: F. J. Bailey, November 12th; C. E. Brisley, November 16th; T. F. N. Gerrard, November 21st; J. E. B. Maclean, November 23rd; L. H. F. Irving, January 28th; H. F. Towler, March 14th; A. F. F. Jacob, March 18th; E. A. de Lossy de Ville, F. Fowler, J. H. Rose, April 7th; C. L. Scott, April 16th; R. F. S. Leslie, C. B. C. Williams, C. F. Latimer, May 2nd; J. C. Croft, May 12th.

Proby. flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service: R. Y. Bush, May 2nd; L. A. Hervey, May 12th; C. C. Carlisle, May 16th; J. E. D. Boyd, May 22nd; A. H. Sandwell, W. A. K. Dalzell, May 25th.

WAR OFFICE, JULY 20TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers: July 5th—Lieut. L. A. Pattinson, 5th (T.) Durham L.I.; Temp. Lieut. A. E. G. MacCallum; Sec. Lieut. G. A. Porter, R.A., and seconded.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) R. G. Gould confirmed in rank.

To be sec. lieuts. (on prob.): J. L. Finney, July 6th; G. E. W. Humphrey, July 12th.

* * *

From the "London Gazette," July 21st, 1915.

WAR OFFICE, JULY 21ST.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—V. S. Brown to be Second Lieutenant (on prob.) (July 3rd).

* * *

From the "London Gazette," July 22nd, 1915.

WAR OFFICE, JULY 22ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—Flying Officers: Temp. Sec. Lieut. P. B. Brown, 8th S. Staff. R., and to be transferred to Gen. List (June 30th); Capt. A. G. Moore, 4th Manch. R., and to sec. Sec. Lieut. D. S. Jillings, W. Yorks. R., Sec. Lieut. S. T. Saunderson, N. Irish Horse, S.R., and to be sec. (July 2nd); Sec. Lieut. A. A. A. Knight, R. Mun. Fus., from temp. capt. 8th Bn., and to be sec. (July 9th).

ROYAL REGIMENT OF ARTILLERY.—ROYAL HORSE AND ROYAL FIELD ARTILLERY.—Maj. to be lieut.-col.: E. B. Ashmore, M.V.O., and to remain sec.

Lieuts. to be capt.: F. A. Wanklyn, and to remain seconded; A. Christie, and to remain sec.; K. P. Atkinson, and to remain seconded.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in their rank: J. B. Robinson, A. T. Whitelock, O. Greig; E. S. Braham to be Sec. Lieut. (on prob.), July 19th.

* * *

From the "London Gazette," July 23rd, 1915.

WAR OFFICE, JULY 23RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—CENTRAL FLYING SCHOOL.—The following

appointment is made:—Instructor: Lieut. (temp. capt.) G. F. Pretymann, D.S.O., Som. L.I., from a flight commander, and to retain his temp. rank whilst so employed, vice Capt. H. Le M. Brock, R. War. R., July 16th.

MILITARY WING.—The following appointments are made:—Flying Officers: Lieut. A. Graves, Dorset R.E., T.F., temp. Lieut. W. D. Long, A.S.C., Sec. Lieut. C. R. Rowden, Worc. R., and to be sec., July 2nd; Sec. Lieut. A. C. Horsbrugh, Sp. R., July 9th; Sec. Lieut. G. P. A. Harvey, 3rd Dragoon Gds., and to be sec., Lieut. J. H. Mansfield, 3rd Shrops. L.I., and to be sec., Sec. Lieut. J. B. Robinson, Sp. R., July 10th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) W. H. T. Rampling-Rose is confirmed in rank, and to be lieut., July 1st; Sec. Lieut. (on prob.) A. C. Horsbrugh is confirmed in his rank.

W. C. Mortimer-Perbun to be Sec. Lieut. (on prob.), July 9th.

* * *

From the "London Gazette," July 24th, 1915.

WAR OFFICE, JULY 24TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Comms. to be Squadron Comms., and to be temp. Maj. whilst so employed:—Capt. F. J. L. Cogan, R.A., Capt. A. Ross-Hume, Cameronians, Capt. C. F. De S. Murphy, R. Berks R. (July 12th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) E. I. Bingham is confirmed in his rank. To be Sec. Lieuts. (on prob.):—J. Latta (July 3rd); R. Newman (July 9th); S. A. Laird (July 19th).

* * *

From the "London Gazette," July 26th, 1915.

WAR OFFICE, JULY 26TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appt. is made:—Flight Commander.—Lieut. C. C. Darley, R.A., from a Flying Officer, and to be temp. Capt. whilst so employed (July 12th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on prob.):—C. W. Hill (July 3rd); D. A. Hansard (July 8th); C. G. Tucker (July 26th).

NAVAL.

The following appointments were notified at the Admiralty on July 21st:—

ROYAL NAVAL AIR SERVICE.—The undermentioned granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: G. E. Stringer, July 14th; and H. Jullerot, May 27th.

Temp. Sub-Lieut., R.N.V.R., E. Roberts, promoted to temp. lieut., R.N.V.R., to date July 1st.

Temp. Sec. Lieut. J. B. Soames granted a temp. commission as lieut., R.N., and appointed to the "President," additional, from July 19th.

Petty Officer Mechanic R. E. Dean (to date July 22nd), and Messrs. C. T. Freeman and Whetnall entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date July 24th.

Chief Petty Officer A. C. Marx and Messrs. N. R. Fuller and D. S. Mason granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date July 20th, July 14th, and July 14th respectively.

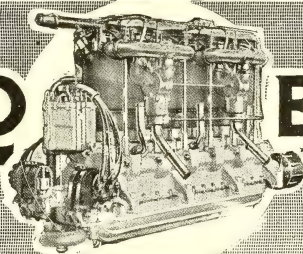
* * *

The following appointments were notified at the Admiralty on July 22nd:—

ROYAL NAVAL AIR SERVICE.—Temporary Sub-Lieutenant

BEARDMORE

AERO



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THE BEARDMORE AERO ENGINE, LIMITED,

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SURREY

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

(R.N.V.R.), H. F. Melville, promoted to temporary Lieutenant, with seniority of July 21st, and reappointed.

Chief Petty Officer (Mechanic), C. A. Schurr, promoted to Warrant Officer (second grade), for temporary service, with seniority of July 21st, and appointed to the "President," additional, for R.N.A.S.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, and all appointed to the "President," additional, for R.N.A.S., with seniority as follows:—F. R. Sadd, July 15th; E. M. Morgan, W. R. Mackenzie, C. Laurence, J. S. Browne, and M. J. Golding, July 19th; and M. Keith-Johnston, July 24th.

Mr. H. Mason, granted a temporary commission as Lieutenant (R.N.V.R.), with seniority of July 21st, and appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on July 23rd:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as Probationary Flight Sub-Lieutenants for temporary service, and appointed to the "President," additional, for R.N.A.S., with seniority as follows:—R. H. Nicholson, July 19th; S. G. Beare and G. W. R. Fane, July 22nd; J. A. Carr, C. B. Gasson, P. A. Johnston, and F. E. Sandford, July 26th; and N. Keeble, August 2nd.

Temporary commissions (R.N.V.R.) have been granted to the following:—E. Darrell-Huskinson, T. F. Norbury, and J. Gardiner, as Lieutenants, with seniority of July 22nd; and J. T. Saint (Chief Petty Officer), as Sub-Lieutenant, with seniority of July 21st, all appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on July 24th:—

ROYAL NAVAL AIR SERVICE.—The following entries have been made:—Temporary Sub-Lieutenants (R.N.V.R.), E. B. Cowell and T. F. Le Mesurier, as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of July 23rd, and appointed to the "President," additional, for R.N.A.S. (temporary commissions as Sub-Lieutenant, R.N.V.R., terminated).

B. F. M. Hughes and C. A. Eyre, as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of July 23rd.

C. A. Rea (Chief Petty Officer) and F. D. Till (A.B., R.N.V.R.), both as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of July 21st and 22nd respectively, and all appointed to the "President," additional, for R.N.A.S.

L. A. S. Hansard, granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of July 16th, and appointed to the "President," additional.

* * *

The following appointment was notified at the Admiralty on July 26th:—

ROYAL NAVAL AIR SERVICE.—Acting Commander H. T. A. Bosanquet, to the "President," additional, for R.N.A.S., to date July 24th.

* * *

The following appeared in the Marriage Columns on July 27th:—

GREY-DERING.—On July 21st, very quietly at St. Peter's, Eaton Square, Spenser Grey, D.S.O., Squadron Commander, Royal Naval Air Service, son of the late Douglas Grey, to Dorothy, daughter of the late Lionel Ashton Dering and of Mrs. Dering, of 3, Malvern Road, Southsea.

* * *

A story which enjoys some popularity in the Royal Navy relates how a certain Air Mechanic 1, R.N.A.S., was brought before the magistrates at a seaport town, charged with a violent assault on a draper's assistant. The chairman frowned down from his throne upon the

culprit, and, shaking his head slowly and solemnly, said: "I am surprised that so brave a man as you should be guilty of committing such an act. Whatever made you do it?"

The A.M. 1 shuffled his feet in his perplexity. "Well, yer honour, 'twas this way. I'd been afloat on the old 'Lark Loyal' for months and months and months. I've had an uncommon rough time on the old hay barge, samplin' the latest economies in watered rum and petrol, and now and agin I've been up in a seaplane and helped to sink the sea where enemy Dreadnoughts ought to have been, firin' by the map when the blighters were really steamin' away for the next village behind the hill, and I comes ashore on leave with me nerves a bit stretched, and my mate and I has a glass or two, and, after all, it all happened accordin' to Service routine."

"Service routine? How d'you make that out?" asked the "beak." And the A.M. replied: "Well, it was like this. I sees this here linen-draper kid a-walkin' along as large as life, and twice as ugly, when he ought to be in the Army; so I ranges up alongside him like, and looks at him hard, and says 'U 19?' And he says 'Yes,' so, of course, I rams the blighter!"

* * *

Several people would be glad to know who the genius was who thought of circulating a notice to holders of temporary commissions, R.N.V.R., to the effect that "jewelry and spats are not correct uniform."

MILITARY.

The following casualty in the Expeditionary Force was reported on July 20th under date July 14th:—

MISSING.

James, Capt. B. T., Royal Engineers, attd. Royal Flying Corps.

* * *

The following casualties were reported on July 21st under date July 15th:—

MISSING.

Crabbie, Sec. Lieut. W. N., Royal Field Artillery, 1st Lowland Brigade (T.F.), attd. Royal Flying Corps.

Goode, Sec. Lieut. H. M., 2nd County of London Yeomanry (Westminster Dragoons) (T.F.), attd. Royal Flying Corps.

* * *

The following casualties were reported on July 22nd under date July 16th:—

Previously officially reported missing, now unofficially reported prisoners of war:—

Leech, Capt. J. C., 8th (King's Royal Irish) Hussars, attd. R.F.C.

Walker, Lieut. E. G. S., R.F.C.

* * *

The following casualty in the Indian Forces was announced on July 24th:—

WOUNDED.

De Halpert, Sec. Lt. R. V., Corps of Interpreters, Indian Cavalry Corps, attd. Royal Flying Corps.

[Mr. de Halpert was reported as an R.F.C. casualty last week.]

* * *

The following is an extract from a Dutch paper kindly sent by Mijneer Hegener:—

"This aeroplane started from Dunkirk, piloted by an English officer, accompanied by an observation officer, and flew along the coast.

"During its flight it was heavily bombarded, and near Zeebrugge it approached the coast, and near Sluis it was approaching the Dutch frontier. Apparently the officers were not aware of this, but, as something went wrong with the engine, they decided to cross the Scheldt to land near Flushing. They could, however, not reach this town, and were compelled to come down near Cadsand, still believing that they were over Belgium.

"Once landed, they made preparations to destroy the machine, which a Dutch soldier of the Naval Brigade prevented. When they heard that they were on Dutch soil they seemed to be very pleased.

"When landing rather roughly, one of the officers was wounded in the eye. The machine stuck in the sand on the dunes.

"Lately we see aeroplanes here almost every day, and shooting at them can easily be heard. Late in the evening and at night we often see rockets and searchlights for the purpose of detecting aeroplanes."

A member of the H.A.C. now on active service, writing home, says:—

"Many thanks for AEROPLANES. Was very pleased to have them. I shall hardly want to go to Hendon after this, except to see some 'stunt' flying. The hum of aeroplanes almost gets monotonous over here. They are passing over us all day. If we happen to wake up early in the morning we hear them. I woke up the other day about 3 a.m., and there was one passing overhead then.

"The Germans seem to have some good machines. Some of them appear to be very fast. There was one over several times yesterday, and our gunners were putting in some wonderfully good shooting practice. Some bits of shell fell quite close to me the other night, when our guns were firing at a German machine.

"We seem to have got some new machines over here, as this week there have been some extra large ones about—much larger than I have seen before."

FRANCE.

The communiqué of July 20th says:—

Last night one of our dirigibles dropped 23 bombs on the military station and the munitions depot of Vigneulles-Les-Hattonchatel.

The airship returned to our lines without accident.

The communiqué of July 21st says:—

Thirty-one aviators yesterday bombarded the railway station of Conflans-Jarny, an important junction.

Three shells of 155mm. and four of 90mm. were observed to have been neatly dropped on the station. The engine shed was struck by a shell of 155mm.

Three Aviatiks were put to flight by our pursuing aeroplanes which accompanied the squadron. One Aviatik was compelled to land rapidly.

Two aeroplanes yesterday afternoon again bombarded the railway station at Colmar, and four shells of 155mm. and four of 90mm. fell on the lines.

The communiqué of July 22nd says:—

Our aviators dropped eight 3.5 shells and four 4.7 in. shells on the railway station at Autry to the north-west of Binarville (in the Argonne).

The evening communiqué of July 22nd says:—

In the region of the Camp of Châlons enemy aviators attempted to bombard the villages and railway stations at which supply posts had been established. They were violently cannonaded. The incendiary bombs which they dropped caused no damage.

The communiqué of July 23rd says:—

One of our flying squadrons employed on bombardment duties yesterday evening dropped twenty-eight shells on the railway station at Conflans-le-Jarnisy, and obliged two Aviatiks to alight in their lines.

The evening communiqué of July 25th says:—

A German aeroplane came down near Bethancourt, and the two airmen were made prisoners.

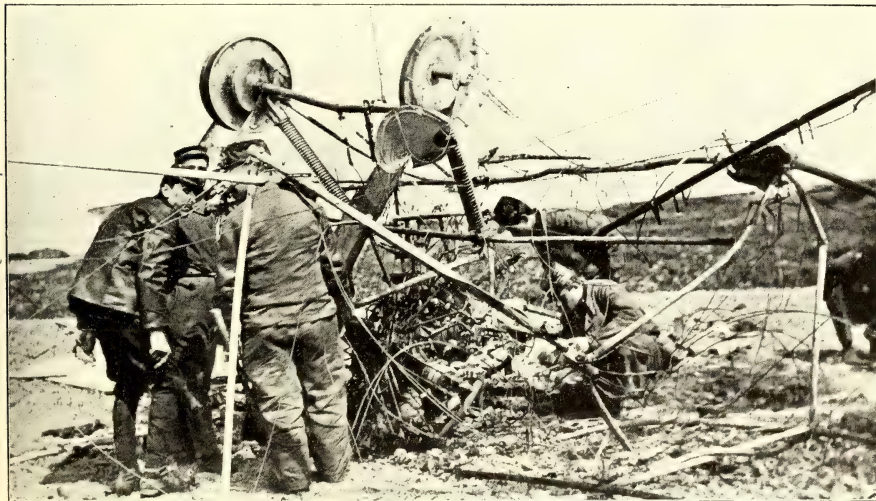
The communiqué of July 26th says:—

Our airmen dropped some 3.5 in. shells and some arrows on the military station of Nantillois, to the north of Montfaucou.

The "Journal" states that on July 20th a German Taube again bombarded Sainte Menchould and Neuville-a-Pont.

During an artillery action the German aeroplane flew over the town and directed the fire of the enemy's batteries. French guns fired on it, and two aeroplanes were sent up in pursuit.

After a chase the German machine was obliged to descend in the French lines.



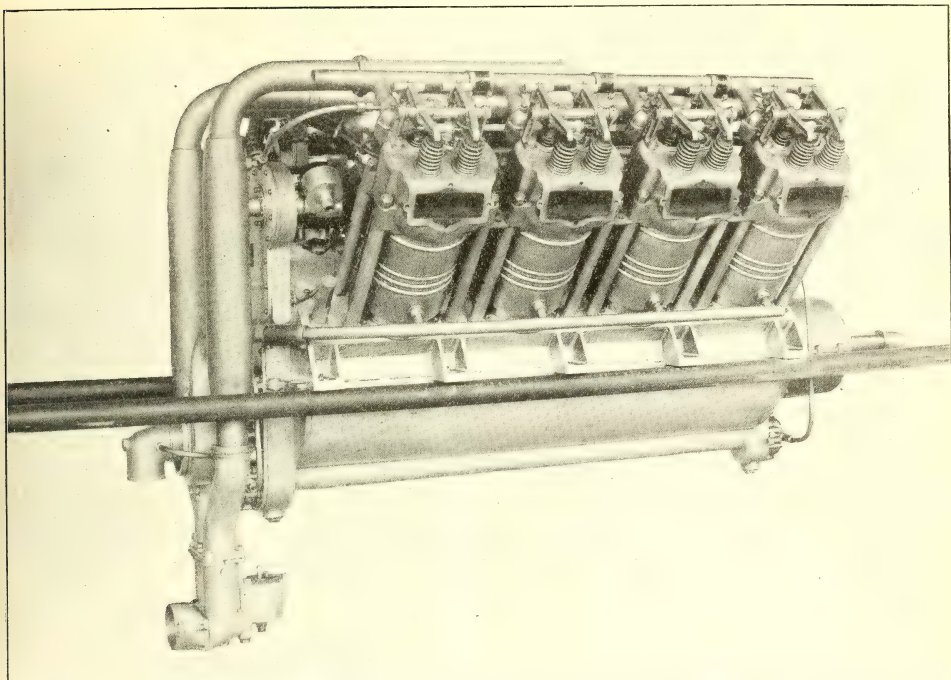
A SLIGHT INCIDENT.—The result of a fire on a French biplane which turned over after hitting a bank, without injuring the crew.



THE PRODUCTION OF AN AIRCRAFT FACTORY.—This photograph, taken on May 24th, shows the inside of the Factory begun on March 30th.

ACCELERATING AIRCRAFT PRODUCTION-II.

LAST week we saw the beginnings of a Curtiss Factory, a wilderness with a few posts in position on March 30. Above is seen the interior of the Same Factory on May 24, running at full speed. In Seven Weeks the output of complete aeroplanes had commenced from what had been bare ground. On these lines aircraft production can be accelerated to an unlimited extent. ¶ The output of Aero Engines must be accelerated on a similar scale if the Aeroplane Factory is to be used to the best advantage. Curtiss Motors are made entirely in Curtiss Factories. Each size of motor is now made in its Own Factory. ¶ At Hammondsport, N.Y., the Original Curtiss Motor Factory is turning out seven "O X" and "O X X" 90-100 h.p. engines per Day. The Buffalo Factory is turning out the New Model "XV" 160-170 h.p. engines at the rate of ten Complete Motors per Day. The Curtiss Aeroplane Co. has first call on all these motors, so that Production can be regulated to suit known Deliveries of Motors. ¶ The Works have



THE PRODUCT OF A NEW AERO-MOTOR FACTORY.—The Curtiss 160-170 h.p. Model "XV" engine.

never to wait for Deliveries from other Motor Builders, and the most efficient Production in the World is the result. ¶ Increased Quantity does not mean Decreased Quality. On the contrary, Increased Business has enabled the Curtiss Companies to increase their Experimental Work, and thus to improve still further Production and Practice. ¶ As Evidence, note the new "XV" Curtiss Motor. The Power is raised to 170 net Brake Horse-Power, the Weight has been reduced to 575 lbs. ¶ As for Complete Aeroplanes—with the most Completely Equipped Plant in the World: with Experience of building Light Motors dating from 1903: with Continual Practice in designing and building Aeroplanes since 1908: with Everything to Gain and Nothing to Lose by building the Best and Nothing Less than the Best: it is natural that the Output of the Curtiss Factories should be the Most Effective and Efficient in the World. We are prepared to give Reasons to anyone entitled to know.

THE CURTISS MOTOR CO., Hammondsport, N.Y.

General Representative, L. J. SEELY, 17, Surrey Street, Strand, LONDON, W.C.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

A Taube flew over Dunkirk on July 26th and dropped bombs, which caused insignificant damage. The Taube immediately made off, pursued by French aviators.

* * *

It is reported on the authority of the "Petit Parisien" that aviators from the Dunkirk base have now located the big gun that flung shells on Dunkirk last April and again recently. It is said to be a 15in. naval gun, and the report says:—"The gun was mounted on rails and taken out on to a platform, where it was placed in position. It fires at an angle of 40 deg., a shell which rises to a height of 4,000 or 5,000 yards (?) to fall nose downwards at a distance of 24 miles."

[This ought to be about right. 15,000 to 16,000 feet should be about the top of the trajectory.—Ed.]

All round the emplacement of this cannon anti-aircraft guns are disposed, but their presence has not prevented pilots and their observers from visiting the spot, coming down to take photographs and even dropping a few well-placed bombs. For some time this 380mm. gun has been silent.

* * *

A French pilot, recently in England, tells an extraordinary story of one of the last exploits of M. Gilbert before he was interned in Switzerland.

It appears that for some time a huge German tractor biplane had dominated the portion of the line where M. Gilbert was on duty. This machine, though having only a single engine, was of such size, and had such phenomenal speed and climb that its engine must have given at least 200-h.p. It carried a machine-gun in front, just behind the engine, and another aft in the fuselage, the pilot sitting between the two gunners, so that it could chase effectively, and defend itself from pursuit, and turn a really useful broadside on to anyone it attacked if it could get alongside.

It had brought down several French machines, and was generally considered to be untouchable, in fact, the Frenchman who told the story says that the machine on one occasion flew for four hours over the French lines without anyone venturing to attack it. Gilbert had previously been brought down twice by this machine with bullets in his petrol tank and engine, and he resolved to get his own back somehow, so one day he went off to Paris and fetched a new Morane monoplane, apparently similar to that little "clipped-wing" machine flown by the late Gustav Hamel, but fitted with a machine-gun and driven by a 90-h.p. Le Rhone, which gives about 100-h.p. He flew this back from Paris, and just as he arrived at his aerodrome the big German appeared.

Up went Gilbert, and for the first time the German crew saw something moving faster than they could move and climbing at least as fast. The German turned as the Morane approached and disappeared into a cloud, climbing hard. Gilbert promptly shot into the cloud after her and climbed clean through the cloud. Seeing no sight of the German he shut off his engine and glided through the cloud listening for the German engine. Then he heard it and set off in the direction of the sound.

By good luck and judgment combined he found the German in a favourable position as regards the position of his gun, and loosed off at once, hitting the pilot after two or three shots. The machine dived, but even as it did so one of the German machine-guns hit Gilbert's engine, and stopped it.

The astonished people on the ground below, who had seen the two machines vanish into the cloud a few minutes before, and had heard the crackle of the machine-guns, suddenly saw the German come headlong out of the cloud, and a second afterwards Gilbert, with his engine stopped, spinning round and round, the German firing hard as he dived. Both came down practically vertically, and the German landed with an awful smash. Gilbert landed safely close by.

It is said that the German pilot was Viktor Stoeffler, the young Alsatian who flew so magnificently in 1913 and 1914, and has been one of Germany's finest sportsmen.

* * *

The howler of the week, so far as the British Press is concerned, appears in "C. W.'s" notes in the "Observer," who after saying, "Rarely do we get any reliable news of French airmen who achieved fame before the war," continues, "The veil of secrecy is lifted for a moment by the publication of the name of Jules Vedrines. Jules is promoted adjutant of the French Flying Corps—a high position for one who a very few years ago was an obscure mechanic."

"C. W." seems to have made the old familiar mistake. The French "Adjutant" is not an adjutant, but a non-commissioned officer of a rank corresponding pretty well to our sergeant-major. He also seems to have forgotten that the French Flying Corps is not a little body above the size of a brigade, as is the R.F.C., but is a real corps of considerable size—thanks to its not having been mislabeled by officials of the type which "C. W." seems so fond of defending. Consequently any officer occupying therein a position equivalent to "adjutant" of a regiment would have to be a staff officer of high rank.

GERMANY.

The communiqué of July 21st says:—

German aviators compelled a French aeroplane to descend near Bapaume. The aeroplane fell into our hands undamaged.

Colmar was bombed by enemy aviators. Ten bombs fell on houses and in the streets. One civilian was killed and a woman injured.

* * *

The communiqué of July 22nd:—

An enemy biplane was brought down by our fire in the Parroy Wood.

In an aerial fight over the Münster Valley (Alsace), three German aviators gained a victory over three adversaries, two of whom were forced to descend in Thann Valley.

* * *

The communiqué of July 23rd says:—

Our aviators dropped bombs on the railway triangle at Saint Hilaire, in Champagne, and forced the enemy aviators to retreat. The barracks at Gerardmer were also bombarded.

In an aerial fight over Conflans (Verdun-Metz road) we destroyed an enemy battle aeroplane.

ITALY.

A communiqué issued by the Naval Chief of Staff on July 23rd says:—

Last night one of our airships dropped bombs on San Polaj and the railway to Nabresina. All the bombs exploded, with excellent results. Another air raid was also made on the same railway, a heavy weight of explosives being dropped on the mark with great effect. On each occasion the airships returned safely, although they had been heavily bombarded by guns and rifles.

At daybreak this morning the enemy with a warship of the scout class and four destroyers bombarded Ortona and portions of the coast railway from there to Pedaso, and also the Tremiti Islands. The only casualties were at Ortona, where an old man and a child of fourteen were killed. The material damage done was insignificant.

* * *

The communiqué of July 25th says:—

On the 23rd inst. two of our seaplanes flew over Riva, dropping 18 hand-grenades on the railway station with excellent results. The enemy's artillery fired on our machines without doing them any damage.

* * *

It is reported that Captain Bol'a, an Italian military aviator, was killed on July 19th, after reconnoitring the

Learn to Fly on Hall Tractor

(Government Type) BIPLANES

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All our Machines are fitted throughout with standard controls, and are safe, speedy and well maintained by qualified Instructors and a competent staff of assistants.

—○—



—○—

PUPILS ARE TRAINED TO QUALIFY FOR ALL BRANCHES OF THE GOVERNMENT FLYING SERVICES.

—○—

Write for full Particulars to Dept. "A."

THE HALL AVIATION COMPANY

LONDON AERODROME, HENDON, N.W.

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BIPLANES.

SPEED VARIATION $\left\{ \begin{array}{l} 38 \text{ m.p.h. min.} \\ 81 \text{ „ max.} \end{array} \right\}$ WITH FULL LOAD.

On February 27th, at Ithaca, N.Y., a Thomas Tractor Biplane climbed 4000 ft. in 10 minutes, carrying pilot, 4 hours' fuel, and ballast equivalent to $3\frac{1}{2}$ cwt. of Bombs.

THOMAS BROS. AEROPLANE Co. (Inc.) Ithaca, New York, U.S.A.

European Representative: OLIVER W. THOMAS, "The Mount," Mavelstone Rd., Bromley, Kent.
TELEPHONE 394 BROMLEY.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

enemy's lines. It is not clear whether he was shot down or not, but the machine fell from 1,200 feet into the Italian lines.

* * *

I have obtained a few details to supplement the naval bulletin of 17th inst.—in which mention was made of the capture at Barletta, of vinous fame, of one of the three seaplanes which had earlier in the day bombed Bari.

They reached this latter place at 6 a.m., detected in good time by the "look-out" at the semaphore on the Castle. Flying somewhere about 9,000 feet, they appeared to be Albatros machines, the leader with an aluminium nose to the body, and all three showing Austro-Hungarian colours surmounted by the usual Teutonic cross. The Castle and railway stations were visited, and some damage effected, fourteen people being injured, half the number, of which some were soldiers, succumbing.

The raiders were, it is clear, given a right warm welcome and obliged to break company; one followed the coast-line, somewhat inland in a northerly direction towards the town, whence strong wines flow.

Near here someone of the defenders got home to the mark, for smoke was seen to issue from the Albatros, which started to "travel more slowly," presumably "planado." Anyway, the pilot got her down comfortably on the sea some three miles out, and attempted to put the damage right. Indeed, so engrossed were the occupants in their repair work that they did not notice the row-boat which put out to capture them.

It is thought that a small fire was started and put out as the wings were scorched. Possibly the small petrol tank was holed by a bullet; evidently the engine stopped and to repair it was easy. This is borne out, too, by the pilot doing in the engine by firing his revolver into it at the moment he was made prisoner.

The captured officers, both very young naval men, and not of Teutonic extraction—one is said to be of Servian birth—created a favourable impression.

On the 18th inst. the well-known Milanese sportsman, Nino Camogli, had wondrous luck at Cameri, when flying for his F.A.I. ticket. He merely precipitated from the neighbourhood of 2,000 ft. in a side-slipping 80 Gabardini unhurt, making the Red Cross ambulance, which promptly arrived to bring back his remains, feel very uncomfortably *de trop*.

That school with Landini among the instructors and Lt. Russi C.O., with a supply of Farmans, seems to be a good thing for Italy just now.

An inspiring personality passed from among us when Capt. Av. Gaspar Bolla met his end a few days back at the front. Officially, "he fell from 900 ft. when flying."

A brilliant cavalry officer in his earlier years, his braveness and cheerful activity as pilot in the Libyan campaign made him generally known and liked. Turin, where he was some time commandant of an escadrille, the first, or one of them, and where till war broke out he served as instructor in the Cavalry school during the months of intense preparation, will not easily replace or forget him.—T. S. HARVEY.

RUSSIA.

The Petrograd correspondent of the "Morning Post," whose blatant boastfulness continues to be a blot on that excellent paper, reported on July 20th that on the 18th a Russian "Dreadnought" aeroplane had a fight with three German aeroplanes. A Sikorsky was scouting when three German aviators attacked from above, below, and from one side. "Some accident prevented the Russian plane bringing its full armoury to bear, but one of the German machines approaching too near was so badly damaged by the Russian fire that it fell headlong."

The Sikorsky had "several of its motors and one of its propellers put out of action," besides holes in its tanks. "Considerable damage was also done to the

stays and stringers. The captain of the plane was twice wounded, and one of the crew had both hands frozen in endeavouring to stop the leaks in the benzine tanks at the great height at which this aerial battle was fought."

To give artistic verisimilitude to the narrative, the correspondent continues:—

"The Russian plane, when attacked, was over two miles above the ground, an altitude at which the summer weather, even so far south as the neighbourhood of Krasnostav, where this occurred, had no effect on the temperature, and the cold was increased by dealing with evaporating benzine.

"The Russian plane reached home again in spite of its serious injuries, which would have destroyed twice over any other form of heavier-than-air machine yet known."

This genius of a correspondent neglects to explain how "several" motors were put out of action without a corresponding number of propellers being put out with them.

"Stringers" is a useful pseudo-technical word to impress the public, but it means nothing to the aeroplane constructor.

The yarn of the frozen hands is quite ingenious, as is the height of about 11,000 feet, which is a trifle higher than most machines can reach at all—unless the Russian and German machines are much better than those in the Western war area.

His last paragraph is just pure brag, of exactly the kind that makes his writing so offensive. He cannot even bluff, for his writing is not likely to inspire confidence in anyone who knows his subject, and therefore he is rather likely to discredit our Allies, the Russians, in the eyes of people in this country. All his jeers about German drill-book, parade-ground, autumn-manœuvres generalship have been shown up at their true value lately, and his sly hints of the great things Russia is going to do and of the traps the Grand Duke Nicholas is preparing for the Germans have been exposed as the mere vapourings of a space-filler. The "Morning Post" is so strong and so sane on most subjects that it is a pity this disfigurement is permitted.

* * *

A German aeroplane recently dropped bombs in Warsaw in a vain attempt to destroy the bridge over the Vistula. There were several casualties among the civilians. Fragments of one bomb struck a tramcar, but only two passengers were injured.

BELGIUM.

It is reported that during one of the recent raids by Allied aviators in the neighbourhood of Brussels bombs intended for the hangars at Sainte Gathererham (a fanciful name this!) missed their objective, but one of them fell on the Arbitragepost. This is where German astronomers are supposed to work out the meteorological conditions for the Zeppelins.

The Arbitragepost, which contained a number of costly instruments, was entirely destroyed.

SWEDEN.

Another fatal accident has deprived the Navy of two skilled aviators. On Saturday evening, the 18th, Lieuts. Count Hamilton and Malmquist, both certificated pilots had flown in one hour from Ystad to an island by Karlshamn on the Navy's newest aeroplane, 80-h.p. engine, built at own works at Stockholm. Early on Sunday morning they continued to the Naval harbour at Karlskrona, when the spiral glide descending got to a nose dive from an altitude of several hundred metres, Lieut. Malmquist falling out of the machine and being instantly killed, Count Hamilton being found dying in the completely smashed aeroplane, exhausting shortly afterwards in the hospital.—Hr.

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U. S. A.

It is reported by the American aeronautical Press that it is common knowledge in the States that 32 Curtiss flying-boats of 200 h.p. have been ordered by the British Government.

It is also said, on equally unofficial authority, that a still larger type of flying-machine is being built for a similar destination at the Curtiss Co.'s works at Toronto. This is said to be a land-going biplane, 102 feet in span, and fitted with twin 160-h.p. motors. It is expected to lift a useful load of a ton at 75 m.p.h.

It is also said that during the week ending July 2nd no less than fifty machines were shipped to England from New York alone.

The above statements have not been verified and must be taken exactly for what they are worth. If, however, they are correct their republication can do no harm, as the American papers are naturally perused with care by the Germans, and reach Germany via Scandinavia as soon as they arrive here.

* * *

The American papers also record that the increased demand for Curtiss motors necessitates expansion and a new factory is being established at Buffalo, in the Century Telephone Building, opposite to the Pierce-Arrow factory.

The following are the students training at the Curtiss School at Buffalo:—Messrs. A. D. Johnson, San Francisco; James J. Lynch, late Sergeant-Major, U.S.A., New Mexico; William Sullivan, Newport, Rhode Island; Carl Mather, Paw Paw, Mich.; Pervus Loggie, Montreal, Ontario; C. A. Whitbread, Buffalo; Lieut. Frank Maythem, Third Battalion, N.Y. Naval Militia.

The two officers from the First Battalion of the New York Naval Militia are expected to join the school soon.

* * *

It is reported that Messrs. Anthony Jannus and Walter Johnson are going to Russia for the Curtiss Aeroplane Company. If this be so, they will probably act as assistants to Mr. C. C. Witmer, who is the firm's regular Russian representative. During a recent short stay in England, Mr. Witmer expressed a high opinion of the Russian Flying Services, both on sea and land, and agrees with others who know Russia that, so far as the individual pilots are concerned, the Russians are more than a match for the Germans.

* * *

The Polyplane Motor and Metal Manufacturing Company, of St. Louis, U.S.A., are marketing a metal alloy called Krauselum. This is an extremely light metal with a specific gravity never over 2.20, and with tensile strength up to 40,000 lbs. Several motor manufacturers use the metal for pistons and crank cases; one of the largest marine engine constructors in the United States is favourably considering its use for cylinders; and the Polyplane Company itself has a 75-h.p. aeroplane motor which is said to weigh only 175 lbs. complete. Cylinders, pistons, crankcase, and all parts except connecting rods, crankshaft, and bearings are made of the new metal. The motor is said to be highly successful and turns a 7½-foot diameter by 10-foot pitch propeller at 1,600 r.p.m.

It is claimed that one of the most valuable features of the metal is its resistance to corrosion by salt water and hot gases. It is said that samples left in sea water for seventeen months merely attain a superior polish, while other alloys have been eaten through. Likewise, cylinders and pistons are not pitted by extremely hot gases.

Judging from the above description, the claims of Krauselum seem well worth investigating.

CANADA.

It is reported from Toronto that the Government is investigating frequent reports of the appearance of aeroplanes in the neighbourhood of Montreal. It is suspected that these machines are responsible for the recent nitroglycerine explosion in powder works at Rigaud. A bomb

was discovered under the armoury at Dauphin, Manitoba. The fuse was lighted, but it failed to explode the bomb.

[Apparently, the Canadian public has a more rapacious maw for improbable yarns than even the Americans or English.—Ed.]

JAPAN.

From the "Manchuria Daily News" of May 14th:—"The naval aeroplane No. 10, manned by Lieut. Inouye and Sub-Lieut. Ikura, which took flight from the Oppama Aerodrome this morning, went wrong in its engine while in flight over Anegasaki and fell into the sea about 10 ft. deep. The aeroplane was badly damaged, Lieut. Inouye sustained a few scratches, Sub-Lieut. Ikura was unhurt."

THE HOUSE OF LORDS.

During the debate on July 21st Lord Parmoor called attention to the Government's scheme of insurance in regard to damage to property which might result from bombardment or air raids. Great experience and a large amount of information had been obtained by the Committee which had been assessing compensation in the case of such raids, of which he was a member, but the Government's scheme had been developed without any reference to that knowledge. The scheme was unfair, and the proposed contributions were most unreasonable.

In consideration of the insurance offices placing their staffs at the disposal of the Government, the companies would receive 15 per cent. of the gross premiums. That was forty-five times what the cost should be, according to the experience of the Committee of which he was a member.

The schedule of rates put an absolutely absurd burden on the householder, the person in occupation of premises and the owner of stock. The premium on buildings, 3s. to 4s. 6d. was cent. per cent. too high.

Country districts were not aimed at by Zeppelins. It had been discovered that where a bomb had been dropped amongst crops there was no instance of more than 4s. or 5s. worth of damage. The experience of the Committee which had assessed compensation was gained at a time when the damage was likely to be heavier than now.

[The rates were noted last week.—Ed.]

PRIZE COMPETITIONS.

Various papers note that a Peer named Lord Michelham, formerly Sir Herbert Stern, of Herbert Stern and Co. (London and Paris), has set aside £10,000, to be awarded in sums of £1,000 to "any British airman or airmen who shall succeed in destroying a Zeppelin while in the air." If more than one aviator destroy the same Zeppelin, the £1,000 will be divided between them. The number of £1,000 prizes is limited to ten, and the competition is open to both Services.

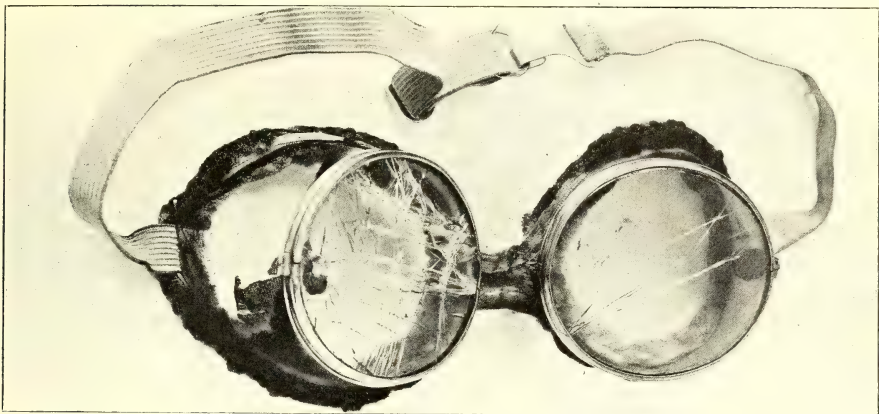
If the competitors meet with success the result should be a good advertisement for the prize-giver's firm.

What with Zeppelin-strafting competitions, photography competitions, and so forth, it ought soon to be possible to make soldiering pay, even without the Co-operative Looting Society, which was suggested some time ago in this paper.

EFFICIENCY.

If in nothing else, the Ministry of Munitions is efficient in asking questions. The other day there came to this office a portentous document demanding to know what machinery the paper possesses—the idea being, apparently, to discover whether it is fit for making munitions of war. Just why the editorial office of a newspaper should be suspected of harbouring shell-making machinery, which is presumably shirking its duty, is not at first sight obvious, but on second thought the horrid idea suggests itself that the acute official mind may class the editorial fountain-pen as a gas-engine.

If modesty did not forbid, one might suggest that the editorial pen really has, in a manner of speaking, added something to the output of British aeroplanes.



FROM "THE AEROPLANE," JULY 21ST, 1915.—"A pair of Triplex Safety Glass Goggles which saved two lives."

"AN EXTRAORDINARY ESCAPE.—The following letter deserves to be widely read, as it shows the very real advantage of wearing goggles which afford definite protection to the eyes under circumstances in which ordinary glass goggles would have failed and almost certainly have caused loss of life :—" To the Triplex Safety Glass Co., Ltd., July 14th, 1915. Sirs,—I enclose a pair of Triplex Goggles I had from you some time ago. You will observe that although the glass is all there it is badly cracked and the frame is severely burnt. My aeroplane was set on fire by a German shell at a considerable height, and I think that I would have lost my sight and consequently my life, if I had not been wearing your Triplex Goggles. As it was, I was able to effect a landing in spite of the flames. The machine was completely destroyed in a very short time. Please send me another pair of goggles.—Yours faithfully, XXXXXX."

[The Editor can vouch for the genuineness of the letter, which is certainly remarkable testimony to a most useful article which should be a part of every pilot's outfit.]

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OCCASIONS AND CHANCES.

"... The forward cylinder was depending on that unknown force men call the pertinacity of material; which now and then balances that other heart-breaking power, the perversity of inanimate things. . . ."

Thus of the s.s. *Halliotis*, ex *Martin Hunt*, alias *Shah-in-Shah*, one-time *Julia McGregor*, formerly *Guiding Light*, and *née Aglaia*, when the practice-charged shell from the Dutch gunboat burst the fore connecting-rod cotter-bolts; whereupon other kinds of calamity promptly ensued.

Hence the Devil; but at least the Deep Sea faithful kept her afloat.

Whereas your element aloft consistently refuses any such mercy.

Which, more than the devil or the deep sea, is hell itself; there being no skyhooks yet invented. Although it is likewise all in the day's work.

Nothing like this story would be written about your outfit if—at the precise moment of abolishing a Rhine bridge, instead of gutting a Celebes pearl-bank—a fragment of Bosch shrapnel happened to get it in the same place. The spectators of that sort of incident, few or many, are distant, mostly unsympathetic, rather glad than not. And the one or two chief defendants are seldom able afterwards to give any sort of account. Also the R.Ae.C. Accident Committee has gone out of business; being mostly otherwise concerned with very personal occasions of the war. Thus the circumstances: conditional, not a bit extenuating.

But exactly the same equally unrecorded thing would happen if only one nut of a single cotter-bolt on any crank-

connection in any sort of motor happened to wriggle loose, merely because some over-driven, sleep-dazed assembling mechanic had just forgotten to open the pin, that had consequently slipped through the castellation that nut might have had; or not, as it chanced.

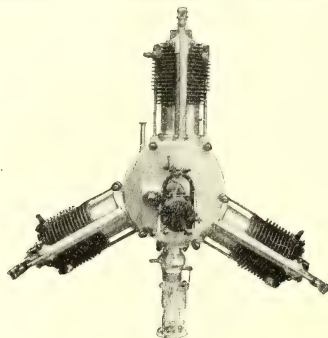
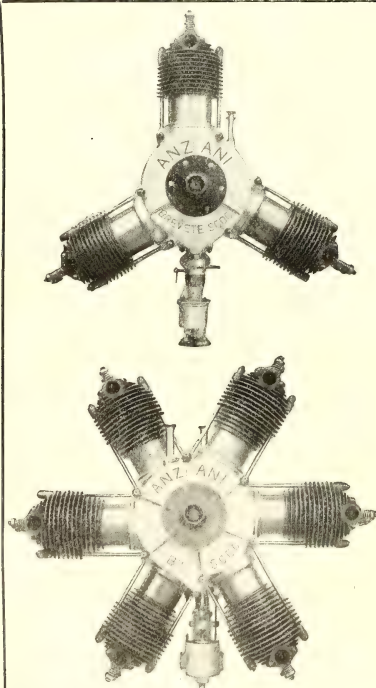
You don't matter, of course; it's your job, with perhaps a pennyworth of stamped gunmetal hanging to it by a shred of red ribbon for you, if you make good a little more notably than a thousand others in the same job, and the G.O.C. happens to be told of it. But what a rotten pity to miss that bridge by such a pin's length! Which, less than never, would be no excuse.

Wherefore your salvation both ways, lies assuredly in construction, not kind; very thoughtfully settled and chosen before the event.

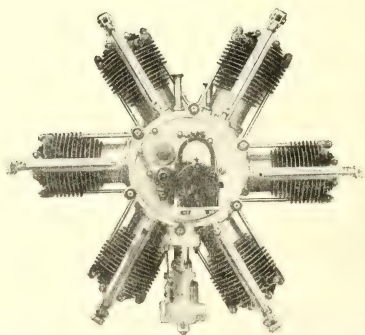
Obviously, in this case, by the abolition of the cotter-bolt from the scheme of any aeromotor.

MORAL AND APPLICATION.

But unto the need of the day's work, the sufficient device. Just as when, at the walking-out stage of mutual attraction, we had to obey the parental command to keep on walking, io, from the larrikin dancing-rooms of (very much) Lower George Street, Sydney, N.S.W., *via* the Calle Mendoza, came the bunny-hug and the tango to our relief. Hence my suggestion—nay, positive insistence in this case—of the closer, more reliable union of the twinned ring-grip, for this connecting-rod big-end and built-up crank-shaft; faithfully created according to the still-useful law of Genesis. Or, as "Orace used to say on dirty nights at the Chariot Club, "*Redit Natura, tam expellat furca*



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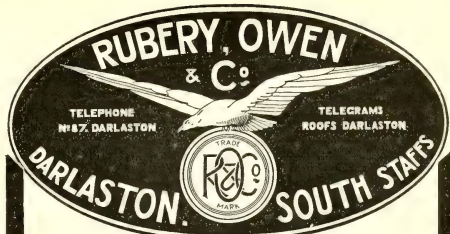
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... something or other; probably spelt much the same way, and coming to the same thing, anyhow, as it mostly does in all countries.

All of which, and the moral [*I don't think*.—C. G. G.], also the application thereof, let no hearty young engineer or pilot ever forget, week-ends or working-days anywhere; for you never know your luck, notwithstanding. Or even walking-out, as I said before.

For the technical result, at any rate, is that there is no motor of any type, rotary or radial, V or vertical, whether it have one or six cranks, that cannot—or should not, for these urgent reasons—have its crankshaft built up, in serial sections, male and female; the locking bolts—which, being always horizontal, do not tend to work loose—having their heads set fast by a single grub-screw in each case. Furthermore, study will soon show that such a crankshaft is not only no more liable to whip than a single-piece one, but cannot be made in any but the right way; that is, with the grain of the metal running in "S" fashion along the journals, webs, and crank-pins.

INTERNAL ANZANI ECONOMICS.

Reverting, however, specially to the Anzani make-up in this matter, the feature of the whole arrangement—which would obviously apply equally well to twin-ring as to split-collar attachments, and to a whole cylindrical bearing bush as to a halved one—is that shoes, collar attachment, and bush together share a simple swinging motion, both mutually, and upon the crank-pin, which obviously reduces both motion and friction to the smallest. It may be true that the further result—whereby all the connecting-rods move in identical paths—perhaps helps to balance the internal movement of the motor. But in my opinion it is not true that this identity of rod-path much affects balance: and the inference—in view of the self-same identity of rod-path in other radials, such as the Salmson, and most rotaries—that by the Anzani arrangement alone can such identity be obtained, would, of course, be absurd.

As will be seen from previous diagrams, each end of the Anzani crankshaft is carried in a ball-race of very hearty breadth and diameter; while at the propeller end a third ball-race which combines with a shaft-enclosing plain ring—actually an intermediate oil-conduit piece—this combination acting both as a journal and as a thrust-bearing for the end-thrust of the propeller.

Furthermore, this ring serves not only as a starting and feed-point to bring the force-fed oil into the hollow crankshaft and thence elsewhere, but the profuse oil-feed itself probably helps to deaden the vibrations set up at high speeds. This seems especially useful, since it is known that when such vibrations occur in time and tune with the explosion shocks, the crankshaft tends to vibrate into the only dispersion points, the actual and extremely limited contact points of the balls with their races: and extreme fatigue and rapid destruction is likely to be set up. The heavy oil-film just here, on the contrary, is intended to absorb and disperse these shocks: and, judging from working records, does so successfully enough: and they, in turn, assist its own distribution.

AND LYMPHATICS.

This last, of course, begins with the oil-pump, which is of the plunger-piston, spring-returned type, enclosed, in the first instance, in a watertight chamber cast solid with the valve gear cover. It is worked, however, by the spindle of one of the intermediate valve-gear pinions, which passes—being specially lengthened for the purpose—through this compartment, and has a cam—single or double, according to the size and type of motor—keyed on to it, so that the cam-ramp bears on the plunger piston or pistons, which are returned after each of their little strokes by strong helical springs. The pistons themselves work in the usual bronze barrels, and at the top of their stroke they suck the oil into the working chamber and

through ports in the bronze barrels; while at the out-stroke the oil is driven out through non-return ball-valves, as the diagram shows.

Subsequently, the oil passes through tell-tale sight feeds, then to the main feed-ring between the front ball-bearings of the crankshaft, on into the shaft itself, journals, webs, and crank-pins, and finally into the big-ends. By this time, thus whirled about, it is flung from between the shoe-edges into the crank-chamber in a thick, oily mist which thoroughly lubricates the cylinder walls and the gudgeon-pins. A more or less conventional, but quite adequate, system; the only further feature of which—most essential, nevertheless—is that all connections are of stout tubing of ample diameter.

CARBURATION DETAILS.

On the other hand, the mixture supply is one of the most thoughtfully contrived parts of the whole Anzani scheme: just one of those most valuable things that are least patentable. As the diagram shows, solid-cast with the crank-chamber is the distribution ring—from which a quite ordinary Zenith carburetter is hung—which gives most of the advantages—emphasised in the case of the Salmson some time since—of endless distribution without backlash; and in this design solely, while warming the mixture, directly condenses the oil-mist in the crank-chamber as its excess returns from the cylinders. Again, the feed-pipes to the cylinders are curved towards and ultimately bedded into the radiator-fins; which takes up their work at this point and finally heats the mixture. In this way all possibility of condensation is avoided, better combustion assured with a distinct gain in thermal efficiency for the whole motor under any weather conditions, and, finally, the risk of overheating—especially for the exhaust-valves—noticeably reduced.

The choice of a Zenith carburetter, too, is as good as any other, since the mixture automatically adjusts itself to the piston speed, and its design happens to lend itself readily to fitting a hot-air supply pipe. Not much more needs to be said as to the mechanical detail of the ignition, which in all cases is provided by a Gibaud magneto—of one or other model, according to the number of cylinders—that nevertheless is wired up for dual ignition to each cylinder, just to make sure in case of chance sooting-up. This magneto is mounted on a bracket cast solid with the valve-gear cover, and driven by spur-gearing from the tail of the crankshaft, though its distributor happens to be driven by bevel-gearing from the armature spindle.

THE ANZANI IGNITION.

On the other hand, there is a good deal to be said about the exact relation of the ratio of the ignition-speed to that of the crankshaft in various types of Anzani motor, which matter is rather interesting, not only because—as previously said—it constitutes the key and principle of the Anzani system, but because the obvious arithmetical possibilities differ so from the official explanation.

Let us, then, see just how it goes with the Y type—that is how it must needs go, quite apart from any previous statement of mine—as the six-cylinder is merely a duplicate of the Y, set on a second crank 180 deg. away from the first one: just as the ten is the duplicate of a quintette group: and the twenty of four such groups, set in pairs respectively on crank-pins 198 deg. and 162 deg. apart, to ensure a given one-way lead—and balance-weighted to compensate for this setting, more or less in the Salmson way—rather than merely to ensure even running, as stated.

The story goes then that "the cylinders are arranged equidistant at 120 deg. between their axes"—more or less the obvious position—"the explosions being regularly equidistant at angles of 240 deg."—as they would be in a four-stroke motor, representing in any case 720 deg. of crank-travel, or two revolutions to each cylinder-firing, 240 deg. being here one-third of 720 deg.—and, finally,

that "the magneto consequently running at only 75 per cent. of the engine speed." Incidentally, the exhaust-cam is said to be geared at half-speed; but one never knows.

THE Y-NOT !

We are also told "that it will be easily seen, when looking end-on to the engine, and when the latter"—crankshaft presumably meant, the Anzani being a radial—"is revolving in an anti-clockwise direction, that the cylinders fire successively in a direction opposite to that in which the crankshaft rotates." All the beginnings, you see, of a first-class headache; but, in any case, we get the fact that in whatever direction Anzani crankshafts be set to run, the course of the ignition always goes the other way.

Therefore, the next thing is to see, on the official data, the exact mechanical situation thereby produced in the Y-type: a four-stroke motor with three cylinders—one vertical, as the Y is upside down—and a single crank.

Three explosions, then, are clearly due to occur during every two revolutions—that is, over 720 deg. of crank-travel. Naturally, then, one must occur every one-third of 720 deg., or two-thirds of 360 deg., which is clearly 240 deg.

But the crank is officially stated to run one-third faster than the ignition. That is, through 100 deg. while the ignition runs as much as 75 deg.

So—with one cylinder, let alone three or more—by the time the crank had run through 760 deg. to its second firing the ignition would have run through exactly 540 deg. Just one full stroke late or early! The official mystery hardly works out: not even to a headache.

AND THE UNOFFICIAL ACTUALITIES.

Let us, then, take certain admitted facts to construct another, as to the actual relative ignition speed.

One explosion, we have seen, must occur every two-thirds of a revolution. Also, for the purpose of such explosion and subsequent power-stroke, each piston in turn must obviously be at full compression-instroke to meet the spark. Since, too, the firing takes place, as we are told, at successive points 240 deg. apart, the crank must at least be behind the piston!

Taking the right-hand cylinder then as No. 2, and the left-hand one as No. 3, the anti-clockwise running crank must run through 240 deg. to each full compression-instroke, wherever that may be.

No. 1, then, having had its compression instroke and fired, the crank's next one—and the firing therefor—must be in No. 2, running past No. 3. Likewise, for the next again the crank must go 240 deg. further. But this not only carries it to the completion of the 360 deg. of the first revolution—where No. 1 sits—but 120 deg. beyond. That is, into No. 3. And, finally, No. 3 having fired, the crank's next jump of 240 deg. to an instroke must carry it past No. 2, and to the end of its second revolution, into No. 1 again.

However, no instroke is any use without ignition. So No. 1 having fired, and the next in instroke order being No. 2, no explosion could have occurred in No. 2—as it did, unless the ignition, moving clockwise, had been there to meet that instroke. But having last left No. 1, and due next for No. 2, it could not go farther or faster than the clockwise distance between No. 1 and No. 2: that is, 120 deg., which is just half the distance the crank has to go between these same cylinders anti-clockwise. And as it had to cover this half-distance in exactly the same time, it is obvious that it could only have done so at half-crank-speed. Therefore it could not have been geared at anything but 50 per cent.—Q.E.D.!

Now the six-cylinder Anzani is admittedly the duplicate of the Y, so far as the crank-travel, cylinder relation and firing-order of each triad is concerned. The cranks of each are independent, 180 deg. apart. Yet

the official statement is that the ignition runs $1\frac{1}{2}$ times—or 50 per cent.—faster! Well, here we have a six-point magneto, it is true: and firing occurring twice as often. But as there are six points for the purpose, instead of three, and—quite apart from the independence of each group of three, which means that each exhaust, inspires, compresses, and fires exactly as before—the crankshaft rotates no faster nor slower than before, as neither of its component halves do, which act independently as cranks of two Y groups. A single exhaust-cam will serve for both, but it will not require to run faster for each; relatively to the revolution speed of the shaft itself. Neither then will—nor can—the ignition for all its six points: the function of which is provided for by there being six: i.e., two sets of three each.

So the official statement, like a rubber prospectus, has to be cut down two-thirds actually, to the only possible 50 per cent.!

Substitute five cylinders for three, or two fives on two 180-deg. crank, with two five-point, or one ten-point magneto, and you will as easily see that the self-same conditions and speed-relations must inevitably rule in the ten-cylinder as in the six or the Y.

Likewise in the "twenty." For although one actual cam-piece—albeit four-ramped—has to do all the work, so the said cam-piece is geared at a quarter-speed—the shaft runs no faster, and there are two independent magnetos to do the work: so each need only run at the same half-crankshaft speed for its own group of ten cylinders. Even two five-pointers would only need to run at even speed. There: I have, I trust, at least saved you the official headache!

(To be continued.)

TO TRAINED ENGINEERS.

THE AEROPLANE has been authorised to make the following announcement:—

There are now vacancies for Examiners and Viewers in the Aeronautical Inspection Department, South Farnborough.

The total pay and allowances of Examiners varies between £3 14s. and £4 4s. per week, and of Viewers between 38s. and 48s. per week.

Candidates for Examinerships should be gentlemen having a good theoretical and practical training in engineering, and a knowledge of micrometer measuring instruments.

Preference will be given to gentlemen who are unfitted for military service.

These appointments provide patriotic men, having the necessary qualifications, with an unequalled opportunity to serve their country.

[One is inclined to envy the men who are so fortunate as to secure these vacancies, for the A.I.D. is not only theoretically one of the most necessary establishments connected with aviation in this country, but it is one of the most efficiently organised and managed, and is, therefore, highly effective. A.I.D. inspection is primarily responsible for the extraordinarily small number of break-ages in the air which have occurred to British-built aeroplanes since the department was established, and for the maintenance of the high stand of quality of British machines despite the rush of war work. The balance which the Department has maintained between the desire for safety and the demand for quick delivery is very remarkable.]

Therefore, anyone who has the luck to join the Department now may be certain that his ability will be most usefully and efficiently employed, and that he will be able to work under the best possible conditions under highly intelligent and able senior officials. There is full scope here for the best class of man to serve his country in the most efficient manner.—Ed.]

Small Factory Output and How to Speed It.

BY GEORGE H. MANSFIELD (Joint Author of "The Motor Accountant" and "Repair Shops and Stores Accounts").

CHAPTER VI.

INSPECTION OR VIEWING AND MARKING OUT.

These two classes of work, while having an important bearing on the successful output from the factory, whether small or large, are here dealt with together because they are so closely identified with one another and, as it were, form the judge and defendant of the shops.

The marking-out department, however, works to a greater extent with the work-taker than with the inspectors. When work of certain nature is being put into the shop it is the markers-out who will supply the material, having themselves obtained the same from the stores. The necessary quantity of the correct material—that is, correct as to dimensions and correct as specified by the information contained on the drawing—will be got together, and in some cases the outline of the actual parts will be marked out on the material, while in other cases, as, for instance, the machining of drop-stampings or the drilling of pressings, will be indicated on the stampings by the markers-out, who will also check the jig to be used.

By the proper use of such markers-out, trouble may be avoided to a large extent through a drawing being misread by the operator or by the use of a jig which may not be quite correct. Again, in regard to the material, the risk of using incorrect material, such as steel plate of a wrong gauge or bar of a weaker tensile strength than required, may be minimised as much as possible. Further precautions which may be taken to avoid the erroneous use of wrong material, or, rather, the issue thereof, are dealt with later in Chapter VII dealing with stores.

There is a further and perhaps more important effect of the marking-out department—that is, if only the necessary quantity of material is given out, the operator who spoils any part or makes any parts wrong in the course of work must either turn such scrap work back to the work-taking department, or to his charge-hand, or he will be unable to complete the required quantity as shown on the "tally," unless, of course, the parts are very small, when it may become difficult for the marker-out to cut the required quantity of material so exactly.

It may be said that this latter use of the marking-out department is one affecting, or, rather, assisting, the economic side of the business of the factory, rather than the actual output, because it goes a long way towards forcing the information as to parts, or parts of parts, scrapped into the hands of the work-taker, progress clerk, and ultimately the cost department.

It may be argued that in many cases the risk of wrong material being used is lessened by the fact that the operator, having become acquainted with the details of the actual material required, would detect any erroneous issue by the stores or other department. Doubtless this forms a further check against such mistakes occurring, and it may even be argued that an operator knows the difference between gun-metal and brass, or steel and aluminium, or armour plate and ordinary mild steel; but, on the other hand, will he know the difference between steel plate giving a tensile strength of only 26 tons and a piece giving 35 tons, the latter, for instance, being required? Or shall we take the case of steel bar? Would an operator always notice the difference in working a 55-ton steel and one with a tensile strength of, say, 35 tons?

Anyway, there would be no satisfaction in knowing that 500 articles had been made up, finished and delivered, and in getting them returned because it was found that they failed to reach the required breaking

strain owing to the steel used having been erroneously issued or used direct out of the shop by the operator.

In order to avoid these troubles, however, in many instances where work has been sub-contracted by contractors to small factories the material is supplied, and so, for more obvious reasons than one, the contractor has been careful to issue the correct material. But in large factories, where sub-contracting is done extensively, the methods under consideration are followed, while further precautions may also be taken as to the actual testing of all parts by taking samples from all batches coming through the shops and when they are ready.

The testing of samples of such parts as may come out of the contractors' shops is done as part of the final inspection. Inspection will take place as the work proceeds, and in order to reduce the number of rejections or scrap parts to a minimum inter-operation inspection is necessary, while in some cases viewers will be constantly watching the work and having adjustments made where possible.

If parts are inspected between each operation, the cost of scrap and in many instances final rejections will be reduced to a minimum.

Take the case of a part being made up of a steel plate which has to be adjusted by filing, which requires drilling, holes radiused, and a piece of tube welded on at a certain angle. Unless such a part is inspected carefully after each operation, a quantity of such parts may all be rejected and scrapped on final inspection, owing to a fault, perhaps, in the first operation, or even the original pressing, if the plates carry a plus or minus dimension.

As a rule, two consecutive operations are not carried through by the same, or same class of, worker, so that the inter-operation inspection can be carried through by independent inspectors whose work need not mean that any particular operator connected therewith is idle during such inspection. By passing such work through the work-taking and progress departments its distribution can be regulated; and at the same time the latter department can obtain the precise information it requires.

It may be said that this routine does not necessarily prevent any one of the operators spoiling or causing the rejection of a whole batch of parts by making a mistake from the beginning of the particular operation in question. This should be avoided by constant viewing by the charge hand, who should thereby detect any error in the first instance and as soon as it occurs. A jig may slip or a tool may slip, thus either causing a hole to be drilled slightly out of place, or the milling cutter, for instance, going too deep or not deep enough.

Attention to these two departments of the organisation cannot be valued too highly, and, although it may be said that neither of them can be held directly responsible for the actual revenue to the factory, they are important factors towards efficient work and the production of work at the minimum cost as well as towards the actual rate of output.

(To be continued.)

FROM DENMARK.

A further instalment of aerial war news, sent by THE AEROPLANE'S Danish correspondent, runs as follows:—

A telegram from Berlin on July 1st told the following case:— Lieut. von Trotha, of a light department in Ravaruska, had received a short leave. As most of the time should have passed in railway journeying, one Tuesday morning at eight he left the aviation camp with Lieut. von Kade as a passenger. Flying over Kraham,

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he arrived in Breslau at two o'clock, having thus covered the 600 km. long distance in 5 hours 45 mins. Having taken petrol in, he arrived over Goerlitz, Dresden and Leipzig on his father's residence at 7 p.m. Next morning he continued his flight to Johannisthal, thus cover 1,504 km. in 9 hours 50 mins.

The following is an extract of a letter from a German naval aviator serving with the Turkish by the Dardanelles: May 22nd:—

"For observers I have Turkish officers, and I have always flown with a captain, who patrols excellent. My longest flights were to Lemnos (which represents from here to and fro a distance of 150 km., three-fourths over water).

"I have been awarded the Iron Cross, second class, by Excellence von Usedom, who remarked that I deserved it.

"These flights to Lemnos I have had to undertake four times, with a land machine, a damned delicate affair. The commander of the aviation troops, with recommendations by Excellences von Usedom and Liman, has now proposed me for the Iron Cross, first class."

The former "German Bristol Works" has changed its name into "Halberstadt Aeroplane Works," building for the War Department a tractor biplane, much of similar lines as the Avro, with either rotary or stationary engine. Even the Jeanin Aviation Co. has changed into "Nationale Aviation Co," and for the benefit of patriotism the well-known automobile and aero-engine factories, "Neue Automobile Gesellschaft," while sticking to the initials, want them in future to be interpreted to "Nationale Automobile Gesellschaft."

STAGGERED PLANES.

An air mechanic writes:—"May I be allowed to put forward a possible answer to your correspondent's query on July 7th re staggered planes of biplanes?

"Firstly, in an aeroplane of good design the centre of lift operates between the spars at about $\frac{1}{3}$ of the distance between them from the forward one. Secondly, by staggering the top plane forward and making the rear struts longer the angle of attack of the top plane is decreased.

"Following a decrease of angle there is less detrimental surface, and therefore a greater speed. The centre of lift of the top plane is thrown forward, so that for a finer angle the lift of top plane is not seriously hampered, when it is considered that the machine is going faster than it would have done with the planes in plumb.

"Further, a machine with a reasonable stagger is a good climber and fast, other things being considered, in horizontal flight as compared with the machine with planes in plumb."

[It hardly seems that lengthening the rear struts has anything to do with it, as that would mean having a finer angle on the upper plane than on the lower, which would seem at first sight bound to slow the machine. It may be, however, that owing to some curious effect of "interference" between the air streams from the two planes, it is actually better to run the planes at different angles. Can anyone elucidate this point?

It may be something like that curious trick of bending the rear spars of a Caudron, which makes all the difference between the machine climbing and controlling well or badly. Yet there are probably hundreds of Caudrons flying indifferent well to-day because the mechanics responsible for their tuning have never learned the trick.—Ed.]

NEW AND YET EXPERIENCED.

A firm which is new in name, though it embodies a considerable amount of experience in aircraft building, is that recently started under the title of the Whitehead Aircraft Co., Ltd. The firm's works are at the Old Drill Hall, Townshend Road, Richmond, Surrey, which were formerly occupied by Howard Flanders, Ltd., and they are well adapted to the production of aeroplanes and aeroplane parts.

At present the firm, although young, is very busy making aeroplane parts for the Government, and the growth of the business is so encouraging that preparations are being made for large additions.

Mr. J. A. Whitehead, the principal of the firm, has had considerable experience of aeroplane work, and he has been fortunate in securing an excellent staff of skilled workmen, who are turning out very good work. The principal of the firm prides himself on the efficiency of his production, and as efficiency is one of the most-to-be-desired qualities in this country to-day, the firm deserves every encouragement.

It is understood that the firm has the backing of influential persons, so that the future is regarded with complacency.

AEROPLANE TIMBER.

A short walk across London Bridge brings one into a district little known to the average Londoner, but full of historic associations. Marshalsea Prison, for example, was one of many buildings described in the writings of Charles Dickens. It stood formerly in the Borough High Street, and the site is now occupied by the sawmills of Messrs. Joseph Owens and Sons, Ltd. The house of the governor of the gaol is used as the offices of the company, while the roof of their largest shed—in itself something of an architectural curiosity—is surmounted by the old wooden belfry of the prison.



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For over half a century the name of this company has been prominent in the timber industry. In its early days the firm specialised in wood for vehicles of all kinds—that is to say, all kinds then in existence—and at the present time a large trade is done in wheels, shafts, and other parts of military, commercial, and private conveyances.

When the conquest of the air introduced a new type of vehicle into the world, one of the first firms in the timber industry to take an interest in aviation was that of Messrs. Joseph Owen & Sons. They recognised at once the possibilities of the new trade, and promptly endeavoured to make themselves familiar with its requirements. As evidence of their early enterprise there may be seen, in a corner of their yard, a small heap of spars and struts of unusual design, which were made to order for an experimental aeroplane which, like many another brain-wave, never matured.

Many of our readers will recollect the Lamplough Compound Orthopter, which was exhibited at the first Aero Show. This was entirely constructed of wood supplied by the Borough Sawmills, and possibly the directors of that firm would be well content if every modern machine required as large a quantity of wood!

The attention given to this class of work, and the experience it has brought, has resulted in the building up of a very important department. Large stocks of English ash and poplar, clear silver spruce, walnut, and other

woods are now handled. If there are any aeroplane constructors who are not already acquainted with Messrs. Joseph Owen and Sons, they may be assured of the promptest attention to their enquiries, for this is a firm which thoroughly understands the Trade.—D. W. T.

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AEROPLANE FABRICS.

The manufacture of linen started in prehistoric times. Not semi-prehistoric, like the period when London streets were well enough illuminated for pedestrians to be abroad at night, but really prehistoric, in the days when mummies were first planted in Egypt. By the time civilisation gave us the pocket-handkerchief and the stiff collar it was a great industry, and Belfast was its centre. The largest linen-producing plant in the world is that owned by the York Street Flax Spinning Company, Ltd. The story of the rise of this company would make an instructive chapter in the history of commercial enterprise.

Originally known as Messrs. Andrew Mulholland & Son, the firm was the first to introduce steam power into a spinning mill. This was in 1828, and since that date the business has progressed in a remarkable fashion. The Mulholland family, of which Lord Dunleath is head, have retained their interest in the business since it became a limited liability company under its present title.

The works of the York Street Flax Spinning Company at Belfast comprise the whole process of manufacture, and the plant is as up to date as money and skill can make it. Consequently, when aviation developed and fabrics were required for aeroplanes and dirigibles, it was only natural that a concern of this magnitude should be able to produce material of the best quality for the purpose. As a result, aircraft of all kinds, not only in Great Britain but in other countries, have been constructed with the aid of fabrics from these mills. This department of the business is in very capable hands, and is conducted through the London branch of the firm at 5 and 6, Russia Row, Milk Street, E.C.—D. W. T.

THE WEEK-END AT HENDON.

On Saturday last there was thunder in the air, and shortly after lunch a heavy rainstorm prevented many people from visiting Hendon. There was a considerable improvement later on, however, and by tea-time it was excellent flying-weather. Many passengers were carried, and exhibition flights were given until nearly seven o'clock, when schoolwork was resumed with great vigour.

As on other recent occasions, it was observed that a great number of people remained in the evening to watch the pupils taking their lessons, and it is evidently being now recognised that this forms an exceedingly interesting spectacle.

The afternoon's pilots included Messrs. Baumann and Virgilio on Ruffy-Baumann biplanes, Mr. Roche-Kelly on a Beatty-Wright, Mr. J. L. Hall on a Caudron—frequently, by the way, announced by megaphone as a "Caudron," though the significance is perhaps not quite clear—and Messrs. Manton and Osipenko on G.-W. biplanes.

Pleasant memories of olden times were recalled by the reappearance of the 100-h.p. Deperdussin which formerly did some fine work a year or two back in the hands of Lieut. J. C. Porte, R.N., and Mr. W. L. Brock.

Sunday morning looked most promising, but just as Londoners in large numbers had decided to spend the afternoon at Hendon there came more rain and more thunder, and the attendance suffered.

There were two good hours during the afternoon, and many flights were made and a score of passengers went up. Messrs. Manton, Osipenko, Prodder and Virgilio gave exhibitions. Mr. Osipenko took two passengers aloft in the five-seater, and in spite of a very gusty air succeeded in climbing somewhere near 2,000 feet, probably the highest this machine has achieved.

A heavy rainstorm then induced a hurried descent, and the downpour which followed rapidly cleared the enclosures and put an end to the day's flying. If it had not been for that storm no one knows where Mr. Osipenko and his passengers would have got to, for the "omnibus" was climbing unusually well.—D. W. T.



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SITUATION wanted for boy just leaving school, age 17, as apprentice in Aeroplane Works or School.—Write particulars, etc., to Charles Price, Chandos House, Ramsgate.

PRACTICAL Engineer and Works Manager, with considerable experience in aeroplane production, metal and wood, seeks position of responsibility. Excellent testimonials and references.—Box No. 685, THE AEROPLANE, 166, Piccadilly, W.

SHOP Foreman or Inspector of woodworking department is open for engagement.—Box 684, THE AEROPLANE, 166, Piccadilly, W.

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RUSTON, PROCTOR & CO., LTD. desire to thank the numerous applicants for the position of Engineer to take charge of production of aeroplane engines, and to state that the post is now filled.

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HENDON.

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Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder and A. E. Mitchell.

Pupils with instructor on Beatty-Wright machines: Messrs. Arbon (4), Banks (15), Bond (30), Eaton (50), Fitzherbert (36), Fox (8), Jones (15), King (37), Robb (6), Ross (15), Sampson (35), Tomlinson (70), Vickers (10), Savile-Orntey (10) and Dickenson (45).

On Caudron machine: Messrs. Coates (5), Collett (15), Fawcett (15), Goodfellow (10), Litton (10), Nicholson (20), Rutherford (5), Smith (23), Spicer (15), Thompson (25), Tolhurst (23), Whincup (5), Willmet (10), Stagg (15), Middleton (10), Broadbent (10), Fellowes (20), Cox (30), Jones (40), Kirkwood (15), Anter (35), Greenhill (25), Tremlett (10) and Owen (10).

Machines in use: Beatty-Wright dual-control and Caudrons.

Extra practice was taken by Messrs. Kenworthy and Chave. Exhibitions were given on Sunday, and several passengers taken.

AT THE HALL SCHOOL.

Pupils with Instructor H. F. Stevens: Messrs. Snowdon (9 circuits), Booker (3 circuits).

With Instructor C. M. Hill: Messrs. Gordon (42), Gay (48), Snowdon (6), Lieut. Phillpotts (54), Bell (18), Harchman (32), Lieut. Jowett (20), Booker (18) and Russell (5).

With Instructor James: Messrs. Yonge (24), Bangs (32), Huggan (23), Watson (23), Wilkins (27), Millbourne (48), Baylet (6), Goodrich (22), Cook (5) and Wenner (6). All doing straight flights and half circuits.

Pupils now practically ready for Certificates: Messrs. Snowdon and Booker.

Machines in use: Hall tractor (Government type) biplanes.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Barrington, Blake, Clifford, Dallas, Douglas, James, Perham and Murray.

Straights alone: Prob. Flt. Sub-Lieuts. Hume, Sievking and Douglas.

Eights or circuits alone: Prob. Flt. Sub-Lieuts. Wyllie and Pearson.

Certificate taken by Prob. Flt. Sub-Lieut. Wyllie.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL CO.'S SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren and James.

Pupils: Messrs. Chapman, Welsford, Burton, Frost and May rolling. Messrs. Sykes, Everidge, Sargood, Blackburne-Maze and Jacques straights.

Eights and circuits: Messrs. Adams and Gunner.

Mr. Barton Adams took his certificate in good style on Saturday morning, and on the 25th inst. Mr. E. Redgrave Gunner passed for his "brevet," making a good steady flight.

Machines in use: Three L. and P. biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Baumann, Ruffy, Virgilio and Winchester.

Pupils with instructor: Messrs. Wallis (58 mins.), Mathewson (32), Dixon (58), Wilson (18), May (10), Raiton (36), Ovens (20), and Belton (20).

Straights or rolling alone: Sykes (46), England (42), Dixon (46), Fenning (10), Boisson (2), Wallis (46), Liddell (30) and FitzSymons (38).

Mr. Sykes passed his certificate tests on Sunday morning.

Machines in use: Ruffy-Baumann (60 h.p.), Ruffy-Baumann (50 h.p.), Caudron type (50 h.p.) tractor biplanes.

A considerable amount of passenger-carrying has been done, again many officers taking their first experience of the air.

WINDERMERE.

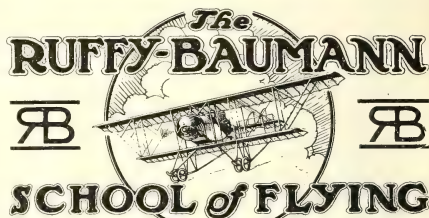
AT THE N.A.C. SCHOOL.

High winds and rain retarded school work considerably.

Instructors: Messrs. W. Rowland Ding and J. Lankester Parker.

With instructor: Benson (16), Barber (28), Buck (10), Inglis (15), Sibley (15), Macintyre (18), Macaskie (20) and Lawton (19).

Machine in use: N.A.C. 50-h.p. Gnome propeller biplane.



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WEDNESDAY, AUGUST 4, 1915

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C. Grey

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ONE PENNY WEEKLY

[Registered at the G.P.O.]
as a Newspaper.

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ON INTERNAL DISLOYALTY

The persistence lately in public prints of the old foolish idea of a "Third Service"—an Air Service which is to be neither Navy nor Army—has been something of a mystery for some time to many of us who are closely concerned with Service aviation. No one with any Service knowledge has advanced any practical argument in favour of trying to produce the Aero-Ultramarine, concerning whom I ventured to break into rhyme some four years ago, or of the said Ultramarine's possible efficiency if produced. Still, some papers keep on harping away at the notion, and people without any knowledge keep on writing to them, suggesting a separate Air Ministry, and so forth.

It was only a few days ago that I struck the trail of a movement which seems to be responsible in some degree for the recent activities of the "Third Service" advocates. At the back of it all there appears to be a desire on the part of some jealous persons or other to upset the whole of the present Directorate of the Air Department at the Admiralty.

In this endeavour they appear to rely on the assumption that one or other of the Sea Lords is opposed to aviation, regards all aircraft as wasters of time and money, dislikes all aviators personally, can see no use for aircraft in Naval War, and generally holds the views held by the Master-General of the Ordnance some four or five years ago, and expressed by a relative of his at an Aero Club dinner at that period.

If such a fossilised officer exists it is quite time the remainder of the Board of Admiralty had him removed, for the welfare of the Navy, and if the said officer is merely hostile to the Air Department because he listens to the tales of the malcontents, it is equally time that his mind was cleared of prejudice and that he was induced to see things in their true light.

WHERE FAULTS LIE.

This paper has, of late, ventured to hint that all is not as efficient as it might be in the Royal Naval Air Service, that certain departments need reform, that certain individuals of marked ability in certain directions are being wasted on trivial work, and that some incompetent individuals are doing more harm than good in responsible positions.

Those criticisms are designed to help the Directorate, both by indicating in which direction faults lie and by conveying to those at fault the fact that they had better mend their ways because, though they may hide their incompetence, or slackness, or evil habits from their superior officers—nothing is easier in a Service where everyone manoeuvres by numbers—their doings and non-doings are watched by others who know something about their work.

But, so far as the Directorate itself is concerned, extraordinarily fine work has been done under extremely adverse circumstances. The best of workmen cannot do their best work with inferior tools, or when overdriven.

There has always been difficulty about getting permission for first-class naval officers to leave their ships

to join the Air Service. Even among my own limited acquaintance outside the Air Service I could name several first-class officers who were thus prevented from joining the R.N.A.S., though their Service experience would have gone far to hammer a proper sense of discipline and dignity into newcomers from civilian life.

The flying temperament is too closely allied to the artistic temperament to possess inherently a love of law, order, and discipline, consequently respect for those qualities has to be driven in by hard work. Unfortunately, many of the *pukka* N.O.s who joined the Air Service in its early days suffered from the flying temperament themselves, so that, though they are as brave as may be, and most skilful as pilots, they were not and are not likely to produce a proper state of discipline among their juniors—especially those who joined as civilians. Hence one of the reproaches against the R.N.A.S. among the Navy proper—though the fault lay with their Lordships of the Admiralty for refusing to permit the right men to join, rather than with the Directorate of the Air Department, for choosing the wrong men.

HASTY PRODUCTION.

Furthermore, the whole Air Service has been built up in a matter of two or three years, and until the outbreak of war the whole of the work done was experimental. These experiments had to be made with men as well as with machines, so that there has never really been time for people to shake down into their proper places.

Just as an aeroplane constructor may hesitate about absolutely scrapping an experimental machine which gives promise of being a good thing in certain ways, so the chiefs of a new department may hesitate to scrap subordinate officers who, though perhaps shaky on discipline or organisation, may inspire their juniors with that dash and daring which is undoubtedly of some value in a bomb-dropping raid, even if less useful than pure discipline in the dreary routine of coast-patrol work or reconnaissance.

The officer who, instead of stating on an official report form that "Flight-Lieut. Brown-Jones, R.N., ascended on a Maurice Farman to endeavour to drop bombs on a German ammunition dépôt," sends in a scrap of paper, saying "Sent one of the quirks up on a mechanical cow to do the dirty on a Bosche bomb-shop," may not have the true Service style; but so long as the "Bosche bomb-shop" is effectually "dirtied" one would hesitate to remove him from his command.

Even where an officer has failed at some particular job, or has not quite made good, his expensively acquired knowledge of aviation may be of value in another job in the Air Service; and there still exist some senior officers who are too kind-hearted, or too loyal to those who have done their best to serve them, to turn down their subordinates for one or even two errors of judgment. Thus, undoubtedly, one may fail to reach that high efficiency which only sheer ruthlessness can obtain.

It is advisable at times to make a public sacrifice "*pour encourager les autres*," and I personally could suggest one or two officers who would really be very little missed or regretted.

THE PLACE FOR REFORM.

Where reform is wanted is not at the top or the bottom, but in the middle. Any Service is really a little world of its own. In this or any other nation the lower classes need little except plenty of food to keep them happy and plenty of discipline to keep them in order, and the aristocracy—in the true sense of the word—is thoroughly sound mentally and morally. The real evils exist in the middle classes, who stir up discontent against their betters, though they themselves are incapable of governing—as has been very effectively shown by various middle-class members of the Government under which we have suffered for some years past. Ambitious mediocrity plots and schemes against its betters, or obtains power and hangs onto it long after its incapacity has been shown.

In just the same way the rank and file of the Services are thoroughly sound, and so are most of the men at the top. The trouble comes from those half-way between who obtain a certain amount of power, or responsibility, or command, by influence or by scheming, and do harm instead of good with it.

Soldiers in all wars have known the harm done by jealousy or incapacity among Staff officers, and the consequent disorganisation of Staff work, which results in reserves not being in position at the right time or in attacks by different units not synchronising, and so forth. The steady-going regimental officer suffers for these personal ambitions or squabbles.

In somewhat similar way the Air Service suffers, in reputation and effectiveness, owing to the ambition and jealousy of mediocrities, who manage to carry on their schemes so that the overworked men at the top of affairs, busy with their duty, know nothing, or next to nothing, about them till the scheme has either failed owing to the incapacity of the schemers or has had its effect.

THE SCHOOL SYSTEM.

One reason for this is the lack of direct communication between those at the top and those at the bottom. Society was never as settled as under the patriarchal system, or even the feudal system, when there was no intervening middle class as a "buffer" state. Similarly, a captain of *condottieri* or a pirate skipper could always maintain discipline.

In our more complicated state of affairs intermediaries are necessary, and that is the weakness of the system. Tale-bearing from the lower ranks direct to the men at the top is as bad for *moral* as is sneaking at school. The Head must depend on his prefects, and it is when the prefects fail him that trouble begins. Which brings us back to the old difficulty of obtaining the right prefects, or, in the Services, officers capable of holding subordinate commands.

The junior officer—the "toad beneath the harrow" to whom I referred recently—knows the source of all troubles—but he cannot report them to the right people, therefore one cannot blame the Head for not knowing of each fault till that fault has reached alarming size.

Personally, I have always regarded the German spy system as a useful institution and fairly efficient, but it seems that even Germany has been badly let down by her spies, so a similar system applied in our own Services would be even less likely to succeed. One is therefore more or less compelled to fall back on the loyalty of subordinate commanders to their chief to keep things straight—as prefects keep things straight at school.

If this were not such a serious matter one would like to ask whether it is not possible for officers who know

where the present scheme is hatching to take things into their own hands and strafe the schemers on their own account. A little physical argument administered wholly illegally but quite effectually by a counter-conspiracy might do a world of good. One recalls an incident in "Stalky and Co." which rather seems to bear on the subject.

After all, the average officer in the Service is only an overgrown schoolboy, and, anyhow, duelling is unfortunately forbidden in the British Services.

THE WORM IN THE FRUIT.

However, to return seriously to the subject. It appears as if someone or other thinks that if those at present at the head of affairs in the R.N.A.S. can be removed, he and his friends may find it easier to influence their successors to his and his friends' advantage.

Naval officers wholly ignorant of aircraft might be so influenced. Or if the whole of our aerial forces were turned over to a "Third Service" the same clique might find good jobs for themselves under a new Ministry equally ignorant of technical matters.

The "Third Service" would mean disaster, but there is little danger of its happening, despite the efforts of a misguided Press. No one can imagine either the keen soldiers of the R.F.C. or the keen sailors of the R.N.A.S. turning over to a hermaphrodite concern destined to be misruled by people who were mere civilians a few weeks before. Such a move would result in a crop of resignations, or of applications to be sent back to ships and regiments, which would knock the whole backbone out of the Flying Services.

The only people left would be ex-civilians and a few self-seekers from the *pukka* Services. Chaos would result. More internal cliques would arise. Confusion would be worse confounded, and the whole thing would go to pieces much as the Roman Empire declined and fell, and for just the same reasons.

THE ONLY RATIONAL ARGUMENT.

The only theory I have seen approaching a valid argument in favour of an Air Ministry was Dr. Lynch's remark in the House—quoted last week—when he said of aviation: "If it is left to a sub-department of a great office it is not so efficiently dealt with as if it be left to an entirely new department filled with new energy and possessing great officers of State. They generally have the faculty of magnifying the importance of their own office"—a delightfully cynical Irish argument. Create a new Minister of a small Department so that he may inflate his department with his own importance. There is really something in it—but one remembers the fable of the frog who tried to rival the ox in size.

On the whole, I prefer my old suggestion that Mr. Churchill should be appointed Air Lord of the Admiralty, so as to free the Air Service from the cramping influence of any Sea Lords who, if not hide-bound, may seem at least to be wrapped up in the tarred rope-ends of an out-of-date naval tradition.

THE PRINCIPLES OF REFORM.

Reform is certainly needed in the Air Service, and I fancy that no one would welcome certain reforms more than the best people in the Air Service itself. Top-hamper of all kinds has been piled onto the Air Department simply because the department was young and energetic and game to take on anything.

The Armoured Car Brigade—or whatever it calls itself—which under efficient officers might have been worth something, might well be turned over to the Army, as a very humble and subordinate branch of the Royal Regiment of Artillery. Some of the temporary officers, who do not even attempt to be temporary gentlemen, and who have done more than anyone else to get the R.N.A.S. a bad name by their behaviour in

public when posing as R.N.A.S. officers, would be much better for the heavy hand of military discipline.

The Anti-Aircraft Corps, a well-meaning but somewhat piffling branch of the R.N.A.S., might also be shed with advantage into the hands of the Garrison Gunners, if, as it seems, coast-defence work is to be a job for garrison guns and not for the Navy. This would, at any rate, relieve some useful naval officers of rather useless work.

SHORE-GOING AEROPLANES.

There is also something to be said for handing all shore-going aeroplanes over to the Army, and confining the R.N.A.S. to seaplanes. The idea is at worst quite logical. But in that event, who is going to look after the airships—the Navy because they may operate over sea, or the Army because they must start from and return to land?

Those internal disloyalists who are so anxious to upset the present Directorate of the R.N.A.S. may do well to reflect, before handing everything over to anyone else, that, but for the men now at the top, they themselves would not be where they are—not that one expects gratitude from them, but merely that one asks them to consider their own interests.

But for the present Directorate there would be prac-

tically no R.N.A.S. at all, simply because there would have been no firms to build aeroplanes for it. Orders from the Air Department kept alive those constructors whom the clique which at the time ran the R.F.C. had resolved to destroy so that they could enjoy a Government monopoly in a Government dockyard.

That clique is still in considerable power, and if a "Third Service" ever came about it is probable that the Royal Aircraft Factory—National Physical Laboratory—Government Advisory Committee clique would manage to secure a considerably greater hold on that new Ministry than would the Disloyalists of the R.N.A.S., and thus the expected fat jobs might not be forthcoming after all.

Even a revolutionised Naval Air Service under officers entirely ignorant of aviation might fall into the hands of the official Mutual Admiralty Society, for the present R.N.A.S. had quite a narrow escape from such a fate not a year ago, and would so have fallen but for certain officers who possess a knowledge of ancient history, and happily their judgment was upheld by the fiasco of the Naval B.E.2c's.

Therefore, the Disloyalists might easily find themselves out of a comparatively cosy frying-pan into a very Sheol of a fire.

ON AN ABSURD AGITATION

On a par, if not actually of a part, with the anti-authority agitation mentioned hereinbefore, is an article to which my attention has been drawn. This appeared recently in a paper called "John Bull."

Presumably not many readers of THE AEROPLANE read that paper, which, judging by one's observations in public vehicles, seems to appeal rather to the lower commercial classes than to the commissioned ranks of the Services. Nevertheless, as the rank and file of the Services possibly read both papers, it may be well to refer to the article, which is entitled "A Strange Discovery," and sets forth a string of names of German, or foreign, appearance which the writer has discovered in lists of officials holding important Government appointments.

The writer carefully states that he casts no aspersions on the officials mentioned, though he manages fairly successfully to convey the impression—to my mind, anyhow—that their names do not inspire confidence, and he definitely regrets that one does not see Smiths and Joneses, and Browns and Robinsons, instead of them.

On the general question of foreign names one may suggest that the majority of the officers and gentlemen who are thus pilloried have attained their positions because some foreign admixture in their blood has caused them to be more efficient than the mere Anglo-Saxons with whom they were in competition in the early days of their Government service.

I have previously quoted in this paper the definition of Great Britain as "An island in the German Ocean, governed by Scotsmen, coerced by Irishmen, and robbed by Welshmen." Except for the German Ocean part of it, the definition holds good. Can one be surprised that an occasional Teuton manages to secure some of the few positions not filled by Norman or Celt? It is only to be regretted that we have not more Teuto-Britons in high places, for then we might have higher efficiency.

German, after a few generations, become highly patriotic for the country of their adoption. For instance, the most efficient cattle-maimers, moonlighters, and landlord shooters I have ever met are the people known locally as Palatines, whose forebears were planted by one of the Georges in the country round Castleisland, in the triangle between Limerick, Killarney, and Mal-

low, to replace the original Celtic Irish who had been massacred, root and branch, in an endeavour to give peace in that time (Good Lord!). These descendants are tall, fair, blue-eyed, and thoroughly Teutonic, and rejoice in names which one may still find in plenty in the Rheinland, and their ancestors came from the "Palatinate," of which the said George was the Elector.

TRAPS FOR THE UNWARY.

The first name in the list mentioned is that of Major-General Sir S. B. von Donop, the much-abused Master-General of the Ordnance. One need only remark that von Donop is an Englishman's ignorant rendering of van Donop, and that the van Donops were Dutch followers of William III, along with the Bentincks, who became Dukes of Portland.

One seems to recall German names held in some honour in France. For instance, Kellermann and Kléber, the two greatest generals of the First Republic, hardly seemed French. Haussmann, who rebuilt Paris for Napoleon III, does not appear of Latin origin. In the present war Generals Foch, Puch, and Pau might all be Teuton rather than Latin, if one went by names only, not to mention General Hirschauer, the highly-efficient chief of the French Aeronautical Service.

Even Guelph—Queen Victoria's family name—hardly sounds English, and Prince Albert of Saxe-Coburg-Gotha, her husband, and the grandfather of King George V, did not—I believe—rejoice in the family name of Smith or Brown.

Turning to those in the list of names apparently obnoxious to the writer in "John Bull," which are immediately concerned with aviation, we find "Maj. (sic) W. S. Branker, Asst. Director, Military Aeronautics"; "Wing Comm. Olive (sic) Schwann, Asst. Director, Air Department"; and "Capt. (sic) M. F. Sueter, Director, Air Department."

To those who have the honour of knowing these officers the inference to be drawn from the article is too obviously foolish to need attention; but there are so many youthful officers of uncertain social status and men of uncertain education in the Flying Services at present that quite conceivably harm might be done if the allusions were ignored as they deserve to be.

In the first place, Lieut.-Col. W. S. Branker, R.A.,

C.B., Deputy Director of Military Aeronautics, is personally as unlike a German as anyone could be; secondly, his name might easily be an Anglicisation of the Italian name, Branca; thirdly, there have been Branchers in this country for some hundreds of years; and, fourthly, those who have had anything to do with his department since he took hold of it know that he is one of the most highly efficient and able officers who have ever touched aviation, and that, but for the enormous amount of hard and intelligent work he has put in, the R.F.C. would be in a far worse state than it is to-day as regards machines, pilots, and everything.

On the Naval side, Captain Oliver Schwann, R.N., has not been at the Admiralty for some considerable time, as he is more usefully, if more dangerously and less comfortably, employed abroad. And anyhow there have been so many Schwanns in Navy, Army, and

Church for so many centuries that it is a trifle late to start worrying about a c, an h, and an extra n.

The most comic error in the whole list is the inclusion of the name intended for Commodore Murray F. Sueter, R.N., C.B. The name Sueter is so obviously an Anglicisation of the ancient Scottish name Soutar that only utter ignorance, or a deliberate suggestion from the Disloyalists, could have dragged it into the list.

Apart even from its Scottish origin, I seem to recall the name of one Tom Sueter, who somewhere in the late seventeen or early eighteen hundreds, invented a somewhat foolish game called "cricket," which achieved such popularity in this country that "to play cricket" became a synonym for absolute honesty and fair dealing towards one's fellow-men. And I think that people concerned with Naval Aviation know that there is still a Sueter in this country who plays cricket.—C.G.G.

THE "MAIL" AND BAD ADVICE.

It gives the editor of this paper considerable pleasure to find himself for once in a way partially in accord with "C. W.," of the "Observer," who, commenting on an article which appeared in the "Daily Mail," says:—

"If anything were needed to cheer us up it is to be found in the fact that the apostles of gloom depend upon misrepresentation of facts. Last Wednesday an article was published in their leading organ in which the following points were argued:—

"1. That the aeroplanes with which England entered the war were, although of excellent design, unsuited to the job.

"2. That the Allies are dependent upon the supply of machines from America, and that immense orders have been placed in that country for 'pusher' (engine behind) aeroplanes (in the construction of which the American manufacturer is inexperienced). That English makers are unable to supply our needs in this respect.

"3. That the Germans are using more powerful motors than we are (the instance of the 130-h.p. engine is given!), and that we are driven to obtain American engines, of which we experience difficulty in securing supplies.

"Every one of these contentions is absolutely unjustifiable.

"Germany, far more than England, found at the beginning of the war that many of the types of aeroplane she possessed were unsuited.

"Our manufacturers have for months been turning out 'pusher' types as required. We are importing from America, but this is merely to supplement our own supplies."

[Which supplies might easily be bigger if certain cramping influences in both Services were removed.—Ed.]

"The Germans not only are not using more powerful motors than we are, but it is even likely that in the development of the big aeroplane engine we have already left them behind."

[Here "C. W." is wrong, for the new big Mercédès engines, and the Maybachs, are at least as powerful and reliable as anything we can make.—Ed.]

"It is nonsense to say that we have any special difficulty in getting American engines; we have been using them for months past.

"The writer of the article referred to exhibits a lack of sound information to a degree seldom surpassed even in the much-abused subject of flying. It is not surprising, therefore, to find that he concludes with the assertion that the 'command of the air' was given to this country through the instrumentality of the newspaper which prints his article! It is at least arguable that the newspaper in question did more harm than good to aviation in the early days, as it certainly does at the present time."

[It is at least certain that a similar amount of money and energy more intelligently spent might easily have done

more for aviation and have secured quite as big an advertisement for the "Daily Mail." As regards its present policy, it is again well meant, but it suffers from lack of intelligence and from lack of technical knowledge, or, rather, from lack of the sense to ask for advice from those who can keep it from putting its foot in it.—Ed.]

"The article further implies that it is in the big aeroplane of long range and power that the Allies are deficient. As a matter of fact, it is extremely likely that the first to be in the field with squadrons of big multiple-engine aeroplanes will be the Allies."

[One fervently hopes that "C. W." is right, but knowing the ways of this country one doubts it. The case is rather that Britain might easily be first, but is not likely to be, and that France may possibly get in front by sheer quickness in action.

Incidentally, "C. W." is hopelessly on the wrong track in saying—as he did a week before—that the twin engine machine has no advantages, and that three engines or more are necessary before the advantage shows up. It may be possible to argue the point at a later date.—Ed.]

PRESENTATION AEROPLANES.

It is announced that more than £35,000 has been received by the "Patriotic League of Britons Overseas," which appears to be the outcome of the "Overseas Club."

The promoters of the League felt that it was not fair that the whole cost of the war should be borne by the inhabitants of Great Britain and her Overseas Dominions, and that British subjects in foreign lands should take their part.

One might, however, suggest that as the Admiralty and War Office are willing to purchase all the aeroplanes which their technical departments will allow manufacturers to produce, the money might have been even better applied by using it to promote the comfort of the wounded, or to provide for the future of the permanently injured in ways not touched by Government departments.

After consultation with the Admiralty, it has been decided to purchase immediately a squadron of 10 large seaplanes of the latest and most approved type. The placing of the contract has been left to the Admiralty, and a cheque for £35,000 has been sent to the First Lord, who has acknowledged the gift in the following letter to Lord Aldenham, Vice-Chairman and Hon. Treasurer:

"My dear Aldenham,—On behalf of the Board of Admiralty, I have to acknowledge with our hearty thanks the receipt of the cheque for £35,000 which you have sent me in the name of the Patriotic League of Britons Overseas. This practical manifestation of the loyalty of the King's subjects outside his Dominions will equip the Royal Navy with a squadron of seaplanes of the latest type, to be named 'Britons Overseas.' In this manner the aim of the League will be realised and expression given to the spirit of helpful loyalty to the Empire which your report of progress shows to be shared by Britons all over the world.—Yours very truly, ARTHUR JAMES BALFOUR."

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," July 26th, 1915.

It was announced in a Supplement to the "London Gazette," of July 24th, that the King has been graciously pleased to approve of the following reward for gallantry and devotion to duty in the field:—

THE MILITARY CORPS.

SEC. LIEUT. OLIVER DWIGHT FILLEY, Royal Flying Corps (S.R.).—For conspicuous gallantry on July 6th, 1915, when he and his observer were co-operating with our artillery. On two occasions, although they were not in a special fighting machine, they attacked German aeroplanes, and, after driving them away, resumed their artillery work. Finally, two hostile aeroplanes came up simultaneously, and, although they had only five rounds of ammunition left, they at once proceeded to attack. In this encounter the observer was killed in the act of firing, and the engine damaged, but Sec. Lieut. Filley landed safely in our lines.

[It would appear that the observer, who was with Mr. Filley, was the late Lieut. Lambert Playfair, 1st Royal Scots and Royal Flying Corps, whose death was reported recently. The aviators were engaged in seeking for hidden German batteries, and kept at their task in spite of continual interference from German aeroplanes. Mr. Playfair was shot through the heart, and, as the official account relates, the machine was brought safely back by the pilot.—Ed.]

* * *

From the "London Gazette," July 27th, 1915.

WAR OFFICE, JULY 27TH.

REGULAR FORCES.—The following Non-commissioned Officer to be Sec. Lieut. for service in the Field:—

INFANTRY.—ROYAL SCOTS FUSILIERS.—Sgt. C. Gallie, from Royal Flying Corps, and to be sec. for duty with that unit (June 20th).

ESTABLISHMENTS.—ROYAL FLYING CORPS. MILITARY WING.—The following appointments are made:—Flying Officers.—Lieut. the Hon. L. J. E. Twisleton-Wykeham-Fiennes, 4th (T.) Oxf. and Bucks L.I., Lieut. R. T. Leather, War. Yeos., T.F. (June 26th); Sec. Lieut. W. H. Nixon, R. Lanc. R., and to be sec. (June 30th); temp. Sec. Lieut. H. S. Shield, 14th Durh. L.I., and to be transferred to Gen. List (July 10th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on probn.) G. E. W. Humphery is confirmed in rank.

* * *

From the "London Gazette," July 28th, 1915.

WAR OFFICE, JULY 28TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Apts. made. Flying Officers.—June 30th: Sec. Lieut. G. A. Turton, Yorks, and to be seconded; Lieut. R. A. Saunders, 7th London Brig., R.F.A.; Lieut. A. Somervail, 4th K.O.S.B. July 3rd. July 6th: Sec. Lieut. A. T. Whitelock, S.R.; Sec. Lieut. O. Greig, S.R. July 17th: Sec. Lieut. A. C. Wright, S.R.; Temp. Sec. Lieut. D. K. Johnstone.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on probn.) A. C. Wright confirmed in rank. F. Hudson to be sec. lieut. (on probn.). July 9th.

* * *

From the "London Gazette," July 29th, 1915.

ADMIRALTY, JULY 28TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS. MILITARY WING.—The following appointments are made: Equipment Officer.—Lt. T. V. Smith, Sp. R., from an Assist. Equipment Officer, and to be temp. Capt. whilst so employed (June 30th).

Asst. Equipment Officers.—Temp. Qmr. and Hon. Lt. S. C. Parr, R.F.C. (March 5th); Sec. Lt. E. I. Bingham, S.R. (July 12th); Lt. R. K. Pillers, 3rd Northn. R., and to be sec. (July 10th); Sec. Lt. G. E. W. Humphery, S.R. (July 10th).

* * *

From the "London Gazette," July 30th, 1915.

ADMIRALTY, JULY 28TH.

The following gentleman has been entered as Flight Sub-Lieut. in the Royal Navy, for temp. service: H. R. Simms (July 28th).

NAVAL.

The following appointments were notified at the Admiralty on July 27th:—

ROYAL NAVAL AIR SERVICE.—Temporary Flight Lieutenant.—R. E. Penny transferred to the permanent list of the R.N.A.S., with seniority of July 25th.

Temporary Sub-Lieut. (R.N.V.R.).—Sir A. G. Hazlerigg promoted to Temporary Lieutenant, with seniority of July 23rd.

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as under:—

A. Turpin, July 22nd; F. N. Halsted (midshipman, R.N.R.), July 26th; and A. P. Hadow, August 2nd, all appointed to the "President," additional, for R.N.A.S.

Temporary commissions have been granted as follows:—H. F. Seagram, H. E. Horne, A. W. Thompson, D. C. Waylen, and J. Neale, all as Lieutenants (R.N.V.R.), with seniority of July 26th; and appointed to the "President," additional, for R.N.A.S.; and W. C. W. Ingle, as Sub-Lieutenant, with seniority of July 26th, and appointed to the "President," additional.

* * *

The following appointment was notified at the Admiralty on July 26th:—

ROYAL NAVAL AIR SERVICE.—Mr. H. R. Simms, entered as Flight Sub-Lieut., for temporary service, with seniority of July 28th, and appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on July 30th, 1915:—

ROYAL NAVAL AIR SERVICE.—Probationary Flight Sub-Lieut., W. D. Wain, entered as Sub-Lieut. (R.N.V.R.), with seniority of July 29th, and appointed to the "President II," additional, for Armoured Cars (appointed as Probationary Flight Sub-Lieut. terminated).

The following entries have been made:—

Probationary Flight Sub-Lieuts. (temporary), E. B. Thompson, W. R. Dainty, G. L. Railton, G. G. Simpson, and C. W. Scott, all with seniority of August 8th; and appointed to the "President," additional; E. L. Ford and R. Spickernell, with seniority of July 26th and August 9th respectively, both appointed to the "President," additional, for R.N.A.S.

Temporary Lieuts. (R.N.V.R.), F. T. Ashford, with seniority of July 26th, and appointed to the "President II," additional, for R.N.A.S. (instructional duties); W. A. Scoble and F. R. E. Davis, with seniority of July 29th, and appointed to the "President," additional, for R.N.A.S.

Temporary Sub-Lieut. (R.N.V.R.), M. A. Sargent, with seniority of July 26th, and appointed to the "President II," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on July 31st:—

ROYAL NAVAL AIR SERVICE.—Late Sec. Lieut. C. L. E. Geach entered as Probationary Flight Sub-Lieut., for temporary service, and appointed to the "President," for R.N.A.S., to date July 28th.

The Secretary of the Admiralty announced the following casualties on July 30th:—

MISSING, JULY 29TH.

Dalzell, Flight Sub-Lieut. William A. K., R.N.

Dolling-Smith, Sub-Lieut. C. H., R.N.V.R.

[These doubtless are the officers referred to in the German communiqué of July 30th, which is deserving of note.—Ed.]

* * *

It has now been ascertained that the late Flight-Lieutenant Collins Price Pizey, R.N.A.S. (Capitaine de Frégate, Royal Greek Navy), died at Edipos, on the Island of Eubœa, of dysentery. The body was taken to Athens on a warship, and the funeral took place with full naval honours.

More than 600 Greek sailors marched in the procession, and there were innumerable wreaths, including one from his Majesty King Constantine, his Royal Highness the Crown Prince of Greece, and the Aviation Service.

Among those present at the funeral were the King's private secretary, representing King Constantine; a representative from each member of the Royal Family, the British Minister, the Serbian Minister, the secretaries and attachés of the British, Italian, and Russian Legations, the Greek Admirals and officers, all the members of the British Naval Mission to Greece (except Admiral Mark Kerr, M.V.O., R.N., absent through illness), the Minister of Marine, the Minister of Communications, and others.

From further information it appears that Admiral Mark Kerr had been ill, and that Lieut. Pizey went to Edipos to see him, arriving weak and ill after a rough passage on a Monday, and dying on the following Friday. Lieut. Pizey had been to Servia shortly before, and developed dysentery soon after his return, but was supposed to be cured. The doctor at Athens reported that he could find nothing amiss with him before he started for Edipos, but it seems that the voyage brought on a relapse which caused his death.

* * *

On July 28th the Secretary of the Admiralty made the following announcement:—

A hydrogen explosion occurred at the Wormwood Scrubbs airship shed at eleven a.m. to-day.

Two air mechanics were killed and nine others injured, some severely.

Some damage was done to the building.

An official report, issued by the Fire Brigade, states that the cause of the explosion is unknown.

About a quarter of the shed, which is about 350 by 80 feet and is used as a store depot, was damaged by the explosion. F. W. Tarlott, Thomas J. Pendlebury, Arthur Matthews, Stanard Warne, and James A. Morris were all burned on the body. B. B. Jarvis was injured by bruises, and he was also gassed. George W. C. Haydon and F. J. Westerman were burned to death. Death occurred before the brigade were called.

An account of the accident says that those who escaped with little or no injury at once set to work to attend to their less fortunate comrades. One of the bodies was taken to Hammersmith Infirmary, which is near the air-station, and laid in the mortuary. The injured received treatment at the infirmary, but the majority were able to leave after being medically treated.

Several days after the accident there were still nine cases in the infirmary, several being severely injured, the condition of one man being regarded as critical. The injuries are chiefly due to burns, bruises, and shock. Viewed from Wood Lane, the air-shed seems to have suffered very little damage.

The Hammersmith Coroner held an inquest on Saturday on George William Cyril Haydon and Frederick James Westerman, air mechanics, R.N.A.S., who were killed in the explosion. Mr. F. Greenwood appeared for



The late Capitaine de Frégate Collins Pizey (Lieut. R.N.A.S.), Royal Greek Navy.

the Admiralty; Wing-Commander F. Boothby, R.N., represented the R.N.A.S.; and Mr. W. Sydney Smith, his Majesty's Inspector of Dangerous Trades, attended on behalf of the Home Office.

Among the witnesses called was Flight Lieut. John Dunville, R.N., who said the explosion occurred between 10.35 a.m. and 10.40 a.m. on Thursday. Hydrogen gas was being drawn off, and the hydrogen suddenly exploded. He stated that he should not like to express an opinion as to the exact cause, except that it was not caused by any irregularity in the cylinders. It was purely accidental, and not due to any neglect of any person. Whatever occurred arose within the shed.

Sub-Lieut. Baldwin, R.N.V.R., stated that he was outside the shed when the explosion occurred. After the explosion he entered the shed and saw one of the deceased men near the tube. Witness was perfectly satisfied that it was an accident.

Chief Petty Officer Scovell said he was inside the shed at the time. The two men who had been killed were turning the valve of the cylinder, from which hydrogen gas was being drawn, when a terrific explosion occurred.

Petty Officer E. J. Stearling, R.N., said that he had just left the shed when the explosion took place, and he rushed back. He had been engaged in the work for three years, and had never experienced an explosion of that kind, but he had heard of them. He had handled some thousands of cylinders.

Air Mechanic I. R. Veitch, who was in the shed at the time of the explosion, said that he had no difficulty in getting out. All the men got out except Haydon and Westerman, and if they had been merely injured, instead of being killed, he thought that they would have been able to escape as well.

Wing-Commander Boothby said that when hydrogen

was mixed with a certain proportion of air it became explosive. He had had previous experiences of cylinders catching fire spontaneously, but it was a rare occurrence. In this country he knew of four cases, and he knew of two cases in Germany, where two airships had been destroyed. The matter had been referred to the best scientists in the country, and no one had been able to discover the cause. It might be due to the electrical state of the atmosphere. At the time of the explosion there was thunder about. It might be due to a little piece of metal setting up friction in the cylinder or a little oil having got there. All those theories had been tested as far as possible, and none had been proved.

The Coroner: "Then the explosion occurred actually at the valve of the cylinder?"—"Yes."

"And it is not connected with anything else except the cylinder?"—"Not as far as we are aware."

"It might have occurred, according to your evidence, at any time, and under any conditions?"—"It might occur at any time under all sorts of conditions."

Mr. Smith: "In your opinion, this was a spontaneous combustion of hydrogen?"—"Yes."

Superintendent Woolger, of the London Fire Brigade, and Sub-Officer Chappel stated that they were satisfied that the cause of the fire was accidental.

Mr. Smith, replying to the Coroner, said that the matter had been discussed that morning at the Home Office, and the conclusion arrived at was that the airship shed came under the Factory Act.

The jury returned a verdict of accidental death, and found that the explosion was due to the accidental ignition of hydrogen gas.

A jurymen asked where cylinders were filled, and whether it was likely that the explosion was due to negligence in filling them. Commander Boothby replied that the cylinders were filled under Government contracts, and there was not likely to be any negligence.

The funeral of Westernman took place on July 31 at Hammersmith Cemetery in the presence of a contingent from the Naval Division at the Crystal Palace and about a hundred men of the R.N.A.S. The coffin, which was conveyed on a gun carriage, was covered with a Union Jack, and the procession was headed by the band of the R.N. Division. The Division also supplied the firing party. The body of Haydon was removed to Folkestone for interment.

* * *

The following appeared in the marriage announcements on July 27th:—

OSMOND—DAVIES.—On July 24th, at St. John's, Blackheath, S.E., by the Rev. A. C. Macnutt, vicar of St. John's and Chaplain to the Forces, Flight-Commander Edward Osmond, R.N., only son of the late Edward Osmond, of Rewe, Devon, and Mrs. Osmond, Pinhoe, Devon, to Emily Doris, youngest daughter of J. H. W. Davies, of 25, St. John's Park, Blackheath, S.E.

* * *

The following appeared in the marriage announcements on July 29th:—

STEWART—NEVILLE.—On July 23rd, by special licence, Henry Stewart, Flight-Lieutenant R.N.A.S., son of late Mr. and Mrs. Charles Stewart, and Maud



The King of the Belgians inspecting a British "Tabloid" biplane in Flanders.

Christian, only daughter of Colonel and Mrs. Neville, Sarum House, Botley, Hants.

* * *

The following appeared in the marriage announcements on July 31st:—

HERBERT - SPOTTISWOODE—VENABLES - KYRKE.

—On July 28th, 1915, at the Chapel Royal, Savoy, John Roderick Charles Herbert-Spottiswoode, Lieut. R.N.V.R. (Attd. R.N.A.S.), of Spottiswoode, Berwickshire, son of the late Captain Arthur Herbert, Coldstream Guards, of Muckcross House, Killarney, to Hylda Marjorie, younger daughter of Colonel Arthur Venables-Kyrke, of Staplegrove, Somerset.

MILITARY.

The final paragraph of a telegram from Sir John French, published by the Press Bureau on July 29th, says:

On the 25th one of our aeroplanes shot down a German machine, which fell in our line east of Zillebeke.

* * *

Reports on German prison camps forwarded to the Foreign Office by the American Ambassador state that Lieuts. Montague Chidson and Oswald Mansell-Moullin, Royal Flying Corps, who are prisoners in Germany, are confined at Friedburg, and that all at this camp are comfortable and well treated.

* * *

The following appeared in the marriage announcements on July 29th:—

LYWOOD—FOSTER.—On July 28th, at Holy Rood, Crofton, by the Rev. R. E. Leigh, vicar of the parish, Oswyn William Gifford Lywood, Lieutenant 1st Norfolk Regt. and Royal Flying Corps, eldest son of Lieut.-Col. Gifford Lywood, R.M.L.I., and Mrs. Gifford Lywood, of Alverstoke, to Hilda Jessie, youngest daughter of the late Montagu H. Foster and Mrs. Foster, of Stubbington, Hants.

* * *

Second Lieutenant J. P. C. Cooper, Royal Flying Corps, eldest son of Mr. and Mrs. P. C. Cooper, of 12, Walpole Gardens, Strawberry Hill, and Gladys Mary, elder daughter of Mr. and Mrs. Alfred Soames, of Grafton, St. George's Hill, Weybridge, are to be quietly married to-day (Wednesday), August 4th, at St. Peter's, Hersham.

* * *

The engagement is announced of Richard Tanfield Vachell, Northumberland Fusiliers and Royal Flying Corps, only son of Mr. Horace Annesley Vachell, of Beechwood, Bartley, Hants, and Renée Hackett, only daughter of Major Wyndham Hackett Pain, late the Queen's Regiment, and Mrs. Pain, of Bransgore House, Christchurch, Hants.

Several people would like to know the identity of the young sportsman (he must have been very young) who passed over the centre of Hounsloo Town on a "short-horn" Maurice Farman, within 200 feet of the roofs, at 6.50 p.m. on Friday last, and where he expected to land if his engine had been as prompt in knocking off work as is the average British workman.

* * *

There is a wholly unauthenticated story in circulation which runs thus:—

From a certain R.F.C. camp somewhere behind the firing line a certain pilot, whom we will call, without the permission of the Censor, Captain Blank, was sent off on a reconnaissance. On his return he was greeted by a flying officer whose name is, or might have been, Dash, with the remark, "Hallo! You're back safely, then?" "Yes, thanks," was Blank's reply, "Had quite a good journey."

The next evening, on his return from another expedition, Dash came up with the remark, "Back again? Didn't get potted this time, then?" "No, thanks, old man, never touched me."

The following day he was again accosted by Dash, who exclaimed, "Ah! still alive after many dangers?" "Oh, yes, feeling top-hole—never fitter. It's awfully good of you to take such an interest in my welfare—very sporting. But why should you?" "Well, you see," came the staggering reply, "I've drawn you in a sweep!"—D. W. T.

* * *

THE HIGH SEAS.

According to the Dutch papers, the trawler *Annie*, which has arrived at Ymuiden, was held up at sea by a big German airship, which, after examining the vessel, disappeared.

FRANCE.

The communiqué of July 27th says:—

Five bombs were dropped by a German aviator yesterday on Dunkirk, but caused no damage.

* * *

A French official refutation of the German communiqués of July 22nd-27th, says:—

The French aeroplanes reported as destroyed descended in our lines without mishap. The bombs launched on Dunkirk have done no damage. We maintain a marked superiority in aviation.

* * *

The communiqué of July 28th says:—

At the Dardanelles there is nothing to report with the exception of slight progress by our troops on our right wing and the activity of our aviators, who successfully bombarded the new aviation camp of the enemy north of Chanak.

They hit the sheds and also a petrol store, thereby causing a considerable fire.

* * *

The afternoon communiqué of July 30th says:—

A German aeroplane dropped four bombs on Nancy. Nobody was injured and no damage was done.

* * *

The night communiqué of July 30th says:—

Our aeroplanes yesterday bombarded (1) the Ypres-Roulers railway at Passchendaele, (2) the German bivouacs in the district of Longueval, to the west of Comles, (3) the German defence works on the Brimont Hill, near Reims; (4) the military station of Chatel, in the Argonne; (5) the station of Burtheourt, in Lorraine.

One of our aeroplanes last night bombarded a factory engaged in the production of asphyxiating gases at Dornach (Alsace).

An air squadron to-day bombarded the station of Freiburg, and another squadron of ten aeroplanes, from

the entrenched camp of Paris, dropped forty shells on the station of Chauny.

A squadron of forty-five aeroplanes left this morning, having as its objective the petrol-producing factories of Pechelbronn, between Hagenau and Wissemburg. Owing to a cloudy sky and frequent fogs, only a portion of the squadron was able to reach the goal.

The factories of Pechelbronn and their annexes received 103 shells. Six shells were also dropped on the station of Detwiller, near Phalsbourg, and six on the aviation sheds of Phalsbourg.

All the aeroplanes returned to their points of departure.

* * *

The afternoon communiqué of July 31st says:—

This morning German aviators bombarded St. Pol, on the coast, where no damage is reported, and Grave-lines, where one child was killed.

Some bombs were dropped by enemy aviators on Nancy. The material damage done was insignificant. One of the German aeroplanes was hit by our artillery fire and was compelled on its return to land between the French and the German lines. The aviators succeeded in escaping, but the machine was brought close to our trenches.

* * *

The evening communiqué of July 31st says:—

A few bombs were dropped by aviators on Dunkirk, causing insignificant damage.

This morning seven of our aeroplanes bombarded the station and the Aviatik factories at Freiburg in Breisgau. One of them was compelled to land on the return journey in the enemy lines in consequence of motor trouble.

* * *

The communiqué of August 1st says:—

Yesterday our aeroplanes dropped thirty bombs on the aviation camp of Dalheim, near Morhange, and six bombs on a military train near Château Salins.

* * *

It is reported that on July 28th a French aviator threw bombs on Zeebrugge. It is said that two German destroyers were damaged.

* * *

While making a descent at Issy-les-Moulineaux, on July 28th, about 7.30 p.m., an aeroplane caught fire at a height of 1,000 ft. The two aviators were burnt to death.

The "Figaro" says that the pilot was the well-known flier of the Sanchez-Besa and Voisin biplanes, M. Benoist, and that the passenger was named Migeon. The two bodies were taken to the Val de Grace Hospital.

According to the "Journal," Benoist, who jumped when in mid-air, was still living when he was picked up, but he died soon after reaching the hospital.

Soon after starting, they appeared to be having difficulties with their motor, and to wish to descend. The aeroplane, which was then at a height of 1,000 feet, capsize. The pilot succeeded in righting it, but something exploded, and the machine caught fire.

An eye-witness of the accident gave the "Petit Parisien" the following account of the accident:—

"When about thirty metres from the ground, a man, or, rather, a human shape, could be seen in the midst of the flames and smoke, who, escaping from the furnace, threw himself into the void. His form, silhouetted against the red glow of the burning aeroplane, looked like a cross. It was Jean Benoist, the aviator, and he fell into the courtyard of a house in the Rue Du Hameau, the roof of which he struck in his descent. His right foot was almost completely detached, and his head horribly crushed. It was impossible at first to establish his identity.

"The fire brigade arrived on the scene of the accident with remarkable promptitude, and extinguished the



The personal ascendancy of our airmen (vide General French's report) is only made possible by the superiority of our machines.

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flames in a few minutes. It was only now that the completely carbonised body of the passenger was discovered. It was ultimately ascertained that he was a man called Meguin, or Hegouin (? Migeon). Both bodies were first taken to the Boucault Hospital, and afterwards to the Military Hospital at the Val de Grace."

* * *

It is reported that Sergeant-Major Dusoy was killed on July 29th while flying in the vicinity of Etampes. His biplane caught fire at an altitude of 300 feet and fell.

* * *

It is reported that two aeroplanes collided at the aviation ground at Chartres on July 30th. One of the aviators was burned to death and the other was seriously injured.

GERMANY.

The communiqué of July 27th says:—

Near Roncq, north-west of Tourcoing (south-east of Ypres), a French aeroplane was forced to descend, and near Péronne (north-west of St. Quentin) a British machine was brought down, its occupants being made prisoners.

* * *

An Amsterdam message says that the official communiqué of July 30th reports that two British aviators were compelled to descend on the water near the coast, and were captured.

[The assumption is that they were both in one seaplane. The obvious remedy for such occurrences is always to send out two seaplanes in company. Thus one would act as a check on the other's observations, and, if one were shot down, or merely brought down by engine failure, the other would stand a sporting chance of being able to pick up the crew and "taxi" back, even if unable to get off the water.]

One assumes that only seaplanes are used for patrols along the Belgian coast, and that no wing or squadron commander is so foolish as to send land machines by themselves on purely coastal work, and thus give his pilots the alternatives only of being captured or drowned. —Ed.]

* * *

The communiqué of August 1st says:—

Yesterday the great aerial activity was continued. The British flying ground at Saint Pol, near Dunkirk, was attacked, thirty bombs being dropped.

The German aerodrome near Douai was unsuccessfully bombed by an enemy squadron. Here one of our battle aeroplanes shot down an enemy aeroplane.

On the French flying ground near Nancy early this morning 103 bombs were dropped and eighteen hits were observed on tents. The enemy machines which ascended for the defence could not prevent the attack.

Six German aeroplanes attacked fifteen French machines over Château Salins, and during 45 minutes' fighting several hostile machines were forced to land. When enemy reinforcements came up our airmen retreated without loss.

To the north of Saargemünd a French aeroplane was forced to descend, and the occupants were captured.

[It is interesting to compare this with the French communiqués of July 31st and August 1st.—Ed.]

* * *

The communiqué of August 2nd says:—

South of the Ban de Sapt our artillery shot down a French captive balloon.

Near Longemer, east of Gerardmer, one of our battle aeroplanes forced a French aeroplane to land.

* * *

The "Cologne Gazette" has just discovered that Germany possesses so-called "invisible" aeroplanes. It relates how "A German engineer, Knaebel, uses for the purpose a material called 'cellon,' which is employed instead of canvas for covering the planes.

"Cellon, which is manufactured by the Rhenish-Westphalian Explosives Company, is a chemical combination of cellulose and acetic acid. It is entirely transparent and does not splinter. It is as tough as rubber, very pliable, and is neither inflammable nor affected by petrol.

"Knaebel made his first experiments in Germany in the summer of 1913, and they showed that a machine covered with cellon is practically invisible at any height above 3,000 ft. At 6,000 ft. the cellon aeroplanes can no longer be detected by the naked eye."

[It will be remembered that long before the war a German aeroplane was tried with an Emaillite wing covering. Anyhow, "Cellon" is a word of British parentage and "Emaillite" is a French word. Readers of the paragraph quoted need not be upset by the notion that either of these estimable firms is trading with the enemy, for both are thoroughly British. Also, aeroplanes with wing covering of acetyl-cellulose origin are not really invisible, for aeroplanes are largely made of wood and steel, engines and tanks are of steel and copper derivatives, and pilots and passengers are made of meat and bone, none of which materials are transparent.—Ed.]

* * *

The "Daily Express" correspondent at Geneva states that reports have been received from Friedrichshafen that a Zeppelin and a Parseval have been dispatched to Pola. Measures are being taken to protect art treasures at Rome and elsewhere.

RUSSIA.

A semi-official note issued in Petrograd on July 30th says:—

"Two Russian aviators, Lieutenant Pokrovsky and Cornet Plovsky, noted an Austrian aeroplane at a distance towards 8 a.m. on July 28th. They flew towards it and opened fire with rifles, forcing it to fly lower. Attempts on the part of the enemy to defend himself proved unavailing, and the Austrian aviators came to earth.

"The Russian aeroplane landed by the side of the Austrian, and the two Russian officers instantly covered the Austrians with their rifles. The enemy, a lieutenant and a non-commissioned officer, surrendered on the spot. The captured machine was an absolutely new Aviatik, with an engine of 120-h.p.

[Assuming the account to be moderately accurate, it points to the new Mercedes engines being bigger than the familiar 100-h.p. The new ones are supposed to be 150-h.p.—Ed.]

ITALY.

A communiqué of July 25th says:—

On the evening of July 23rd three Italian aeroplanes bombed the town of Innsbruck. Eight bombs were dropped, but did not cause any serious damage.

Although exposed to a sharp fire, the aeroplanes were able to return to Italy.

* * *

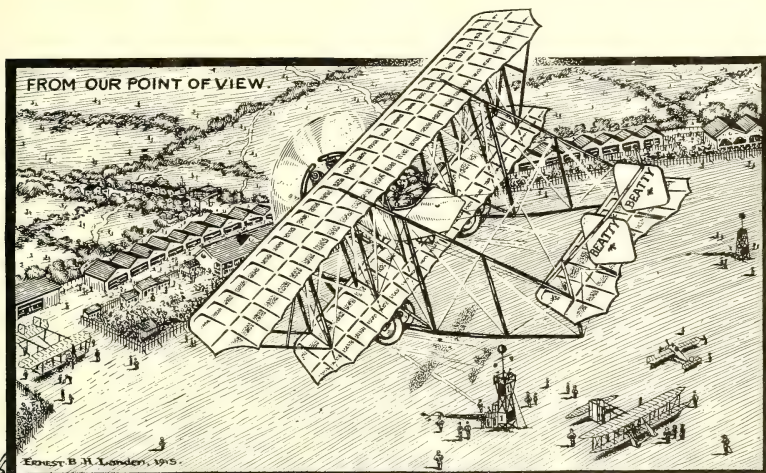
The communiqué of August 2nd says:—

Our seaplanes on Saturday evening made another raid on Riva, dropping bombs with excellent results. They were subjected to a sharp fire, but escaped. Next morning our heavy artillery bombarded with great effect the station of Rovereto, where our observers had reported the arrival of trains full of troops.

* * *

It is reported from Olten that at 5 a.m. on July 25th an Austrian Taube dropped bombs at the Alpini Barracks at Verona. Slight damage was caused to the barracks and six soldiers were injured, of whom two died. Many arrows were thrown, injuring one man.

The extent of Austrian espionage is demonstrated by the fact that the raid was made on the only night when Verona was without a protecting air fleet and half an hour after the regular watch for aircraft had ceased.



The BEATTY ... *School of Flying Ltd.*

IN March, 1914, we started business at Hendon as a School of Flying, with one machine and the sole services of Mr. G. W. Beatty, as proprietor, manager, instructor, etc., combined.

To-day we are the biggest civilian school of flying in the country, possessing a large staff of competent instructors and mechanics; our school equipment consists at the moment of seven machines, with others approaching completion in our sheds, and the number of our pupils is increasing by leaps and bounds; in fact we are continually adding to the numbers of instructors and machines to keep pace with the demand.

Just think these facts out: did they just happen by mere chance, or must there not be some solid reason at the back of them? Do they not imply that our organisation and methods of instruction have made good, and that our pupils, being satisfied, recommend our school? Ask any unbiassed flying men which is the best school of flying, "The Beatty School" will invariably be the answer.

We train our pupils on Beatty-Wright Propeller Biplanes and Caudron Tractors, and are the only civilian school at Hendon giving instruction on two distinct types of machines.

The majority of our pupils enter the R.N.A.S. or R.F.C., more commissions being taken from our school than from all other civilian schools combined.

These are a few facts which should fix your choice on The Beatty School of Flying. For full terms and details apply to

The Secretary,

THE BEATTY SCHOOL OF FLYING, LTD.,

Telephone: Kingsbury 138. **London Aerodrome, Hendon, N.W.**

The "Tribuna" of July 27th states that the poet Gabriele D'Annunzio recently flew over Trieste in an aeroplane piloted by Lieut. Miraglia, who bombarded the arsenal while the poet dropped an autograph note announcing the forthcoming Italian occupation of the town.

Despite the heavy fire which was opened on it, the aeroplane returned undamaged.

[This almost seems a case where the pen was deemed mightier than the sword (or the bomb). Possibly the signature of Gabriel may have been mistaken by the superstitious for that of his still greater namesake—if anyone found the note.—Ed.]

BELGIUM.

The Havre correspondent of the "Petit Parisien" states that, according to a person who left Brussels on the 10th ult., the Germans have imposed a new fine of £200,000 on the city on account of the destruction of the Zeppelin at Evere (or Helmet), just outside Brussels, by Allied aircraft on June 6th.

HOLLAND.

The "Daily Express" correspondent at Amsterdam reports on July 30th as follows:—"Flight-Lieut. Howard, of the Royal Volunteer Flying Corps, who had been a prisoner in Germany since September, has succeeded in escaping from the camp of Neuenkirchen, and has arrived in Enschedé (Holland)."

[This possibly refers to Mr. Bernard Howard, a British volunteer in the French "Aviation Militaire," who was reported missing soon after the outbreak of hostilities. Presumably Mr. Howard has, by disclosing his identity in Holland, succeeded in being interned, which is, one gathers, one degree worse than being a prisoner.—Ed.]

DENMARK.

It is reported from Copenhagen that on July 27th two Danish officers, Captain Münster and Premier-Lieutenant Hoeck, were flying a seaplane, which capsized outside the Copenhagen fort Prøvestenen. They fell on the shore. The former was severely injured, and Lieut. Hoeck, who was a very fine flyer, was killed.

* * *

It is reported from Denmark that the fishing cutter *Ane Kirstine* has arrived in Fredrickshafen with the wreckage of a German seaplane which was discovered in the water some miles west of the Skaw. Parts of the wings, the whole rudder, some tools, etc., which were found, indicate that it was a new machine, and that the accident was recent.

BULGARIA.

It is reported from Sofia that on July 29th two military aviators were killed near the town, the primary cause of the accident being engine failure.

TURKEY.

The "Matin" of July 26th relates, on the authority of a correspondent at the Dardanelles, how a French aviator saved a British transport from being torpedoed by a German submarine.

The aviator observed a dark form beneath the water, and coming down to about 300 feet distinguished a submarine making for a British transport. The alarm was given by "wireless," but there was need for prompt action also. The aviator came lower and dropped several bombs. These, unfortunately, missed the submarine, but compelled it to dive. A minute later the periscope reappeared. The aviator again descended and threw two more bombs. This time the submarine disappeared for good.

INDIA.

It is announced that Sir David Sassoon and Sir Shapurji Broacha, on behalf of the City of Bombay, have presented the Government with two fully equipped aeroplanes.

SOUTH AFRICA.

The Johannesburg "Star," of July 5th, makes the following comments on the work of the South African Flying Corps:—

"That the machines are of no antiluvian pattern was demonstrated a few days ago when Lieut. Creed and Sub-Flight Lieut. Hinshelwood, flying in separate biplanes from Walvis to Karibib, covered the distance of 140 miles in one and a half hours at a height of 12,000 feet, truly a record in aviation for the Sub-Continent."

[The machines are described in the South African papers as Blackburn biplanes—and appear to be B.E.2cs, built by that firm, which is rapidly increasing a well-earned reputation for good workmanship and punctual delivery.—Ed.]

JAPAN.

The last Japanese mail brings the news that the establishment of a military aviation corps on a larger scale than hitherto was approved at the recent session of the Japanese Diet. Not only will the new scheme take effect from this year, but the additional estimates necessary for the Military Aeronautical Association and the expenses required for the study of naval aviation have each passed the Diet. The organisation of a new flying corps is to be completed within three years.

As a first step, the present Tokorozawa corps is to be enlarged by the addition of two more companies of aviators. The second and third branches of the corps will be gradually established as time goes on. The aeroplanes attached to the Military Aeronautical Association will be included in the Tokorozawa corps.

The Association is to receive an extra amount of £10,000, and the Association's total expenditure, plus £9,895 just appropriated for the extension scheme for the current year, will make the gross total available £40,000, or sufficient, it is estimated, to provide the Japanese army with 50 aeroplanes.—C. J. W.

U. S. A.

The military tractor biplane, built by the Heinrich Aeroplane Company, of New York, seems to be well up to the mark in point of performance. Quite recently, it beat the American altitude record for pilot and two passengers by climbing to 6,496 feet, piloted by Mr. S. MacGordon, who, it will be remembered, learned to fly on a Curtiss boat, and later learned to fly land machines on a Sopwith at Brooklands.

The weight of the crew was 466 lbs. and 15 gallons of petrol and 7 of oil were carried. The machine has also reached 7,000 feet, with 813 lbs. on board. The first thousand feet was done in sixty seconds. The machine is fitted with a 110-h.p. Gyro motor.

* * *

The National Aeroplane Competition and the Transcontinental Aeroplane Race have been postponed because of near war conditions and the fact that orders for aeroplanes and aeroplane motors amounting to 4,000,000 dollars are occupying the time of both aviators and constructors. The Aero Club of America and its affiliated Aero Clubs are therefore concentrating every effort in procuring aeroplanes for the National Guard and Naval Militia of all the States.

* * *

The following extracts from a letter which was sent by Mr. Alan R. Hawley, President of the Aero Club of America, to the Secretary of War, Lindley M. Garrison, and purports to describe the state of things in detail, are of distinct interest and not without humour:—

"Each day brings a flood of mail and telegrams and many visits to the Club House, 297, Madison Avenue, from officials of the National Guard and Naval Militia of different States, who want to get aeroplanes for use in the coming manoeuvres; from aviators, sportsmen and people of every age and calling, who want to offer their

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VICKERS LIMITED.

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WAR OFFICE AND ADMIRALTY.

Aviation Department, Vickers House,
Broadway, London, S W.

services, and from Aero Clubs and other organisations who already have started, or who wish to start, movements to develop aviation corps in their own States. Also from States, cities and newspapers, making various offers and wanting to know what to do to participate in the movement.

"The daily reports of demonstrations of potentiality of aircraft at the front, and the realisation that, having less than twenty military aeroplanes and aviators available in the United States, when countries like England and Russia (who have fifteen hundred and one thousand aeroplanes respectively) [Now how did Mr. Hawley learn that?—Ed.] are suffering defeats [That is what *he* says. We call them strategic retirements.—Ed.] because such seemingly large numbers are not sufficient, are making this country realise the necessity of providing aerial forces, and while waiting for Congress to reconvene and make appropriations of sufficient amount to provide for substantial aeronautical organisations for the Army, the country is endeavouring to form reserves to supply immediate needs. [Well, if Congress does, we will forgive him for his little inaccuracies in numbers and so forth.—Ed.]

"The presentation of flying-boats to the Naval Militia of New York State by the Curtiss Aeroplane Co., and to the Illinois Naval Reserves by the two Chicago sportsmen, Messrs. A. M. Andrews and Stuart MacDonald, created especial interest in the National Guard and Naval Militia of the different States.

"In the past week we have secured aeroplanes for Pennsylvania, New York and Oklahoma, as follows:—

"Mr. David H. McCulloch, a sportsman, of Newport, Pa., and a member of the Aero Club of America, who owns two Curtiss flying-boats, has offered one of the machines and his services as aviator, for unlimited time, to the Naval Militia of Pennsylvania.

"Mr. Fred. R. Roberts, of Okmulgee, Oklahoma, who has bought a new Thomas tractor biplane for the National Aeroplane Competition, offers his services and his machine to the National Guard of Oklahoma.

"Mr. Overton Bounds, of Kingston, Oklahoma, has offered his new Sloan tractor biplane and his services as aviator to Adjutant-General Stewart for the National Guard of Oklahoma during the period of the manoeuvres.

"Mr. William S. Luckey, the aviator, offers his services and the use of one of his two Curtiss biplanes to the National Guard of New York for three weeks, beginning July 10th.

"Mr. Charles F. Niles, the aviator, offers his services and one of his two machines to the National Guard of New York, for the period of the manoeuvres.

"The offers have been transmitted by the Aero Club of America to Governor Charles S. Whitman and Brigadier-General John F. O'Ryan, for the New York National Guard; to Governor M. S. Brumbaugh and Commander T. T. Nelson, Jr., for the Naval Militia of Pennsylvania, and to Governor R. L. Williams and Adjutant-General Thomas J. Stewart, for the National Guard of Oklahoma.

"We regret exceedingly that circumstances have made it necessary to postpone consideration of the competition, which was to have begun July 4th and to have ended October 12th, and also of the Transcontinental Race. . . . The individuals, the cities and the States who were co-operating in the developing of these plans felt that nothing further should be done until more favourable conditions should exist. As you know, the conditions have remained unchanged; the possibility of intervention in Mexico, in fact, has rather made them worse.

"In the meantime, the filling of large orders for aeroplanes and motors for the European countries now at war, which now amounts to almost 4,000,000 dollars, have demanded all the facilities of the large constructors, and are employing the majority of the aviators. The demand for trained men is now greatly in excess of the supply. Half

a dozen smaller constructors are also unable to make entries in the competition because of large prospective orders which would employ all their aviators, as well as the necessity of keeping their present machines and aviators at hand to demonstrate to prospective buyers.

"On the other hand, the extraordinary exploits of aircraft in the war, and the interest created in aviation by the first month of our campaign, have stirred public interest in aeronautics, and individual aviators are in demand for exhibition flights in cities and at fairs. For such flights they are paid from 400 dollars to 1,000 dollars, and as they are able to get numerous such engagements, and as the flights required in such exhibitions are far less severe than the flights required to win the 100-dollar Daily Prize, and other prizes offered in connection with the competition, they naturally enter into exhibition flying contracts now, while the demand is keen. Therefore few of the exhibition aviators would be available for the competition in July.

"But the postponement of the competition and the Transcontinental Race will not prevent the continuation of the work to develop aviation squadrons for the National Guard and Naval Militia of all the States. The concentration of effort on this has already resulted in providing aeroplanes for four States—a small number, too small to be of any real value in case of need, we realise, but, nevertheless, of great value at this time, when the Militia needs to manoeuvre under conditions as similar as possible to the conditions in present-day warfare. While the employment of a few aeroplanes will be far from creating these conditions, it will at least afford an opportunity to the rank and file, who have never seen an aeroplane, to become familiar with the possibilities of this latest instrument of warfare. [Can't you see the merry militiaman on manoeuvres stopping his manoeuvring and getting a crick in his neck while "becoming familiar" with aeroplanes?—Ed.]

"The most immediate need, next to the acquisition of aeroplanes for use in the coming manoeuvres, is to supply the Militia with information necessary to enable it to organise the corps in the best possible way, with uniformity, and to enable the authorities of States which do not possess aeroplanes, and wherever the number of aeroplanes are insufficient, to, nevertheless, form corps, teaching the men the rudiments of aeronautics, the principles of aerodynamics, essentials to the care, operation and repair of engines and machines, theory of internal combustion engines, meteorology, and other fundamental principles such as are taught to the Army and Navy officers who join the aviation corps.

"Among the plans of the Aero Club of America to foster the interest of the youth of this country in aeronautics are two, which may interest you, as follows:—

1. To offer to every military educational institution a medal, to be awarded annually to the student of each for the best showing in military aeronautics.

2. To offer prizes to the young members of model aero clubs and other junior aeronautical organisations for a series of monthly contests to be held this year.

"May we ask the War Department to furnish the Aero Club of America with a list of the military schools and other institutions recognised by the War Department, to whom the above-mentioned medals could be offered?

"If other and more feasible ways of advancing the aeronautical movement in America than those now being followed by the Aero Club occur to you, will you kindly advise us?"

[All of which sounds very like the ambitious programme of the long defunct "Aeroplane Club" somewhere about 1910 or so. Evidently America has still to learn that till a State learns to help itself there is little use in trying to help a State.—Ed.]

In Memoriam, S. F. Cody.—Killed August 7, 1913.



The accompanying picture is taken from a photograph of the late Mr. S. F. Cody, published by the Durer Gallery of 16, Dover St., W., and it will be seen that the portrait as such is an exceedingly clever piece of drawing. The engraving itself is thoroughly well done, and the price is quite moderate. Unfortunately the engraver has labelled the portrait as that of Colonel S. F. Cody, evidently being ignorant of the fact that the title of Colonel was an entirely honorary one to which Mr. Cody himself never laid any claim. It probably arose in the first instance in his professional days as an exhibition rider and crack shot. A slight flaw in the picture is that the background gives one the impression that the machine is several hundred feet up in the air, although Mr. Cody is shown sitting with both hands on the top rails of the nacelle, but the publishers, in answer to this point, suggest that the machine may be imagined as standing on the ground on some eminence. Apart from these two little faults, the engraving is so good that many people will be glad to have it as a memento of one of the best men ever connected with aviation.

(Reprinted from the "Daily Mail," August 11th, 1913.)

Crank of the crankiest, ridiculed, sneered at;
Son of a boisterous, picturesque race.
Butt for the ignorant, shoulder-shrugged, jeered at:
Flint-hard of purpose, smiling of face.

Slogging along on the little-trod paths of life:
Cowboy and trick-shot and airman in turn!
Recklessly straining the quick-snapping laths of life,
Eager its utmost resistance to learn.

Honour him now, all ye dwarfs who belittled him!
Now, 'tis writ large what in visions he read.
Lay a white wreath where your ridicule riddled him;
Honour him, now he's successful and—dead.

J. POULSON.

THE R.N.A.S. COMFORTS FUND.

It is satisfactory to know that the R.N.A.S. Comforts Fund has now passed the £1,000 mark.

Mrs. Sueter announces the following recent subscriptions:—July 8th, Mr. H. Garnett, 10s.; Anon., 1s.; July 12th, Mr. H. Volk, 10s. 6d.; July 15th, the Misses Newton, £10; Mr. Prosser, 2s. 6d.; Mr. Flommer, £1 1s.; July 20th, Cathedral School Boys, Ripon (second contribution), 2s. 6d.; July 22nd, Royal Aircraft Factory War Distress Relief Fund, £25; Miss Mocatta, £1; W. Chapman Waller, Esq. (third contribution), £10.

Total previously announced, £952 11s. 1d. Total to date, £1,000 18s. 7d.

Employees in aircraft factories who are drawing their pay because of Admiralty orders are asked to note the very handsome contribution from the Royal Aircraft Factory, which owes nothing to the R.N.A.S. No contribution to such an amount has been received from any aeroplane firm's employees for many months, and it is not at all pleasing to see the small interest these specimens of British workmen take in the comfort of the men of the R.N.A.S., who are the prime cause of their being in well-paid employment.

Readers who possess spare gramophone records are reminded that these will be gratefully received by the men of the Royal Naval Air Service both at home and abroad.

A case of comforts for one of the Kite Balloon Sections at the Dardanelles was sent off last week, and the Fund is greatly indebted to Mrs. Volk, of Brighton, for a supply of thin shirts for summer wear.

Contributions, in kind or kind, should be sent to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.

WASTE OF GOOD MATERIAL.

The following letter from a man who knows what he is writing about may be of interest to the R.F.C.:

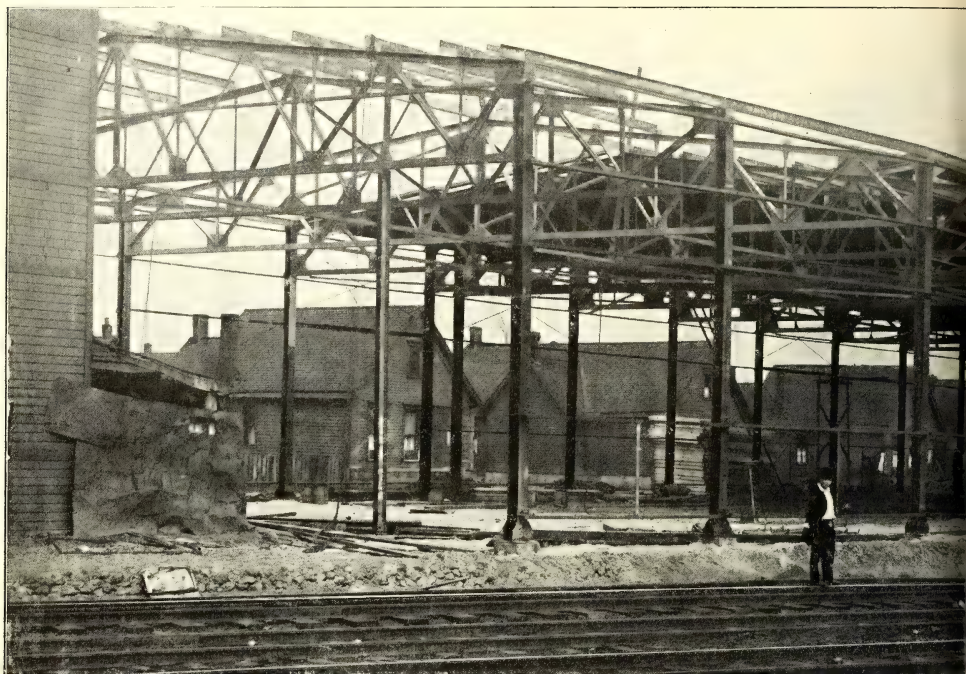
Your leading article in the issue of THE AEROPANE for June 9th exactly hits off a number of cases I know, and my own in particular. I will give you an idea of my circumstances and let you adjudicate thereon. I also was one of those incautious people you mention who enlisted early in the war, thinking to see service within a few months and being actually assured that such would be the case when joining. Thus it happened that I found myself in the ranks of the Royal Fusiliers and under canvas at C—, the battalion being composed of public school and City men principally from the Stock Exchange. Training proceeded apace, and as there was no lack of money in the ranks all went well; many men who were possessed of cars or motor-cycles—and myself among the number—brought them down to the town for their amusement when off duty during the short time that was expected to be theirs before leaving for the front.

But the battalion remained at C— for six months before leaving—and then not for the front, and is in fact still in this country—with the chances of leaving for active service even more remote than when it was first formed.

When one remembers that "the ranks" are composed almost entirely of those very men you mention, men who have made their way in the world, to whom intricate brainwork comes naturally, who have been educated as gentlemen and know how to conduct themselves as such, and, above all, whose physical condition at the moment and knowledge of matters military is of the best—I speak, of course, of the particular unit in question—one cannot but be perplexed at the attitude of the authorities in allowing an obdurate C.O. to veto absolutely the applications of those who wish to be appointed to commissions. I think, as a N.C.O. in this same battalion, I can fairly claim to come under the above heading, having been refused a recommendation on several occasions quite irrespective of the branch of the Service to which I might wish to be appointed, or of any special qualifications I might possess for that branch.

Except that my knowledge of Service etiquette has been gleaned in the comparatively hard school of the ranks during about ten months, and not by casual acquaintance with a stray officer or two in a London club, I should be a fairly suitable man for a commission as officer-aviator in the R.F.C. Briefly, I am an old public school man, 30 years of age, 12 years' experience in the motor world, including 5 years at the bench in one of our largest manufacturers' works, and 6 months with a notable aviation company, have given a great deal of time to the study of various technical questions and theories, have flown several times and raced cars and motor-cycles on numberless occasions on the track and in hill-climbing events on the road, and have been busy with all sorts of mechanical vehicles in spare time since joining the Army nearly 10 months ago.

I would not like you to take my remarks as the wordy



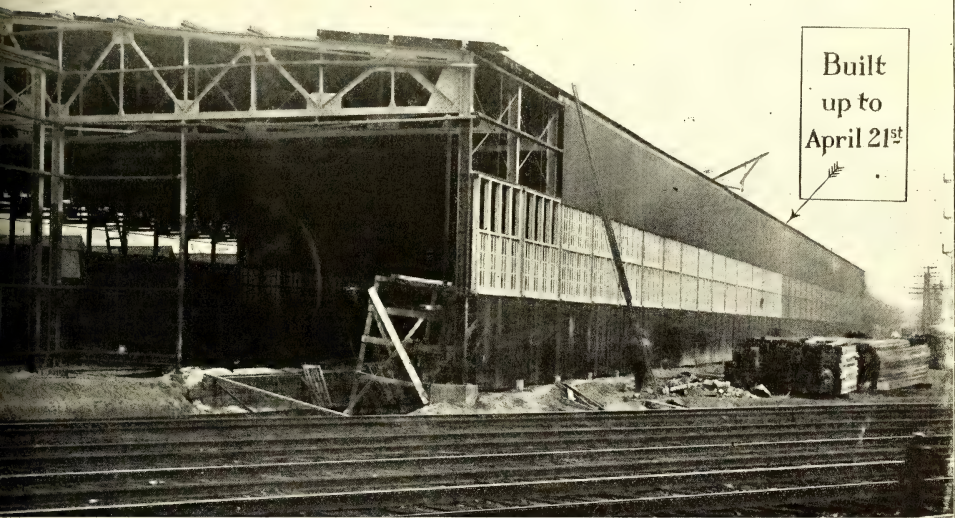
ACCELERATING AIRCRAFT PRODUCTION—III

IN a previous issue we have shown how a New Curtiss Factory grew from Nothing on March 30 to a Good Sized Workshop on April 21, and we have shown how that Section of the Works was employed on May 24.

Ⓒ While that Section was being put into operation further Extensions of the Works were being carried out, and above is shown how that Workshop grew between April 21 and May 18.

Ⓒ All this New Shop was producing Curtiss Aeroplane Parts during June, and the Efficiency which produced a whole New Factory in such a Short Time is reflected in the Production of the Aeroplanes Built in that Factory.

Ⓒ Rushed Work in America does not mean Scamped Work, but More Efficient Work. Speeding Up means Increased Quantity without Decreased Quality.



Built
up to
April 21st

¶ Ten Men properly organised do more than Ten Times the work of One Man, for Each Man does One Job, One Job only, and does that Job thoroughly.

¶ Increased Workshop Capacity means Absolute Standardisation and Interchangeability of Parts, and that is why the Curtiss Aeroplanes and Motors are produced at a rate Hitherto Unapproached and without Sacrificing Reliability.

¶ Curtiss Experience of Aeroplane Design and Construction dating back to 1908, and Curtiss Experience of Light Motor Design and Construction dating back to 1903, are combined with the Findings of the latest European Aero-Dynamic Experiments, and with the latest American High Speed Factory Methods, all combining to produce the Best Aeroplanes in the Greatest Quantities in the Shortest Possible Time. .

¶ We can give Detailed Proof to those who are Entitled to Know.

THE CURTISS MOTOR CO. Hammondsport, N.Y.

General Representative, L. J. SEELY, 17, Surrey Street, Strand, LONDON, W.C.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



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vapourings of the usual Army grumbler who has always a complaint to bring to public notice and who can only state an objection without suggesting a remedy: that is the last thing I wish to do. But, taking my own case, and remembering that there are plenty of others whose circumstances are parallel to it, it does seem a waste of material suitable to a particular and special branch of the Service to allow useful and usable experience to be thrown away upon the work of an N.C.O. whose only requirement is a certain modicum of common sense and a personality strong enough to maintain discipline and strict obedience from the men placed under his charge.

What I should like to know is the name of some "tin-hatted gentleman," who has power to move men from place to place, to whom I and my friends could apply and who would not reply in the usual Service red-tape language, "that the Flying Corps wants men who have had experience as officers, rather than those who have had experience of soldiering and flying," which has actually been said to me by an officer of the R.F.C.

[All of which gives one to think, especially that there need be no shortage of officers if they are sought for in the right place.—Ed.]

CONCERNING SOGGINESS.

A correspondent writes, apropos a remark in THE AEROPLANE of June 16th, asking for an explanation of the expression "soggy planes" and the possible cause and effect.

"Sogginess" is, of course, not a dictionary word, but it belongs to that class of onomatopoeic words which express their own meanings far better than any dictionary can. Actually, "soggy" means much the same thing as "flabby," but having the quality of being somewhat more soft, solid, and boggy than is implied by mere "flabbiness." It also contains a suggestion of sagging, which is generally taken to indicate anything bending in the middle owing to its own weight.

In its normal state a plane or wing of an aeroplane is a rigid structure, consisting of two main spars held at the proper distance apart by distance-pieces, and braced together by wires, so that the whole structure forms a rectangle. Over and under these spars are fixed a number of ribs which generally consist of thin wooden laths, and these again are held apart from one another by wooden distance-pieces. Outside these ribs is fixed the linen fabric covering of the wing, and this fabric is then treated with "dope" so that the linen is drawn up taut, and should remain so for a considerable period.

After continuous use the wing naturally begins to deteriorate. If the wrong dope is used, wind, weather, oil, petrol, and water will gradually remove it and expose the linen to the air, and in some dopes it is also found that the actual action of the dope itself deteriorates the strength of the fabric.

When once the linen becomes stretched again it becomes soft, and the wing loses its shape—that is to say, the fabric on the upper surface is sucked up by the up-current formed by the nose of the wing diving into the air—and so there is a tendency to draw the fabric away from the ribs, to which it is generally attached by small tacks driven through either a strip of tape or a strip of cane placed outside the fabric. At the same time, the fabric on the lower surface is driven upward between the ribs by the pressure below, and so the whole operating surface of the wing loses shape.

At the same time, the internal wires of the wing may stretch, the wood composing the ribs may become soft and partially detached from the distance-pieces, and the ribs also may be deformed by the pressure below and above.

By the time this stage has been reached the whole wing becomes about as rigid as a jelly, and consequently the air neither attacks it nor leaves it in the precise method for which the wing was designed, with the result that the wing loses its lifting power and the machine to which it is attached becomes dangerous to fly.

When a wing has become sufficiently soggy there is the added danger of one of the ribs breaking away and bursting the fabric, or the fabric itself bursting owing to the pressure or suction thereon, or the rotted fabric may tear away from the strips which hold it down on the ribs; and if this occurs on at all a fast machine at any height from the ground, the natural result is that the whole wing collapses before a landing can be made.

However, the chief safeguard about a soggy wing is that, as a rule, it becomes so deformed that it refuses to lift the machine off the ground long before it reaches the stage at which the fabric will burst owing to air-pressure.

On active service there is the added danger that, though a machine with soggy wings is able to fly with safety, it does

not climb well, and frequently refuses to go higher than perhaps 4,000 or 5,000 feet, where it is still within reach of rifle-fire. Therefore it is obviously important that aviators on active service should have an adequate supply of new aeroplanes or, at any rate, of new wings, so that as soon as wings become soggy they may be returned to be rebuilt.

FROM DENMARK.

THE AEROPLANE's Danish correspondent sends a further instalment of German news concerning the aerial war:—

"Flugsport," of May 19th, contains the following casualty list. Feldflieger department—Capt. Jungelblodt, missing; Oberlieut. Lungershausen, missing; Capt. Sander, in prisoner-ship; Oberlieut. and Aviator Koppatzky, told to be wounded and in prisoner-ship; Lieut. Baron von Ledebur, taken prisoner; Lieut. Grosskopf, hitherto missing, killed; Lieut. Seeboth, hitherto missing, in prisoner-ship; Lieut. von Kleist, hitherto missing, according to a private report taken prisoner; Lieut. Menzel, hitherto missing, according to a private report taken prisoner; Lieut. Krause, hitherto missing, killed; Lieut. in the Reserve Peill, slightly wounded in an accident; Lieut. in the Reserve Lengeling, missing; Lieut. in the Reserve Dittler, slightly wounded; Lieut. and Observator Garthe, missing; Lieut. of the Reserve Holle, missing; Lieut. of the Reserve Wittenburg, hitherto missing, taken prisoner; Officer-Replacer Lang, slightly wounded; Officer-Replacer Griebisch, heavy wounded; Officer-Replacer Wohlmacher, hitherto missing, killed; Sergt. Schnabel, severe wounded in accident; Vizefeldwebel Bruderick, killed in fatal accident; Sub-Officer Hechler, slightly wounded in accident; Sub-Officer Engelhorn, hitherto missing, now reported slightly wounded; Sub-Officer Gierke, severe wounded in accident; Aviator Engelhardt, died from illness; Aviator Gutsche, died from illness; Aviator Rost, killed; Gefreiter Spachholz, hitherto missing, killed; Voluntary Krampert, killed in accident; Landsturmann Schäfer, severe wounded in accident.

* * *

According to "Allgemeine Automobil Zeitung," Vienna, three names of Austrian-Hungarian aviators appear in the latest Austrian casualty lists, as prisoners of war, namely: Oberlieut. Kliemitsch, Lieut. Henke, and Capt. von Kaiserfeld.

* * *

From Buda Pest is cabled: A Russian flying-officer, taken prisoner, reports thus of the service of the Russian aviators: "We aviators call the Karpathian mountains 'the revenge of the devil.' For there appear such awful gusts that we can in most cases scarcely keep the aeroplane from overturning. I tried myself no less than three times to cross the Karpathes on their northern part in Bukovina, each time having however to abandon my intention. Already in 1911 the French turned our attention to this danger during the Buda Pest aviation meeting. Out of 32 of our flying officers trained at French schools no one remains at service, as nobody was capable of taking up the combat with the 'devil's revenge.'"

* * *

One of the latest German "Feldpost" letters, sent by an aviator from Ostende, runs: "The day before yesterday I undertook a daring flight to Dunkerque, which city has been continuous bombed by us, so that every obtainable anti-aircraft gun has been set there. Further five big 'peasant's terrors' (the German name for armed Maurice Farman or Voisins) are stationed there, they are quick aeroplanes, armed with machine guns, and even one of them succeeded short ago in shooting one of us down.

"Now the day before yesterday there was a fierce attack by the French by Neuport; three of us aviators must start to patrol over the roads to learn the reinforcements of the French. I was ordered to observe by Dunkerque. The clouds lay as low as in a height of 1,800 feet, so it was impossible to fly across the front by Neuport, for here is the worst angle, pampered with anti-aircraft guns. And the French aim well, but they have even the chance of practising innumerable times every day, so daring we fly. Nor must we be seen from Dunkerque or reported in Neuport, or else we should have been lost with our slow, heavy aeroplane and I should never have brought my account. So, in spite of our not flying a water-plane and the danger of the slightest engine failure, we piloted far out to sea. We found out a hole in the clouds, circled upwards in it, till we were up in the most wonderful cloud-glaciers. Everything round us white like flowers, no earth, no sea, only endless masses of clouds in fabulous magnificence. Every nerve strained, watch and map in the hand—for one minute too much could get our fate.

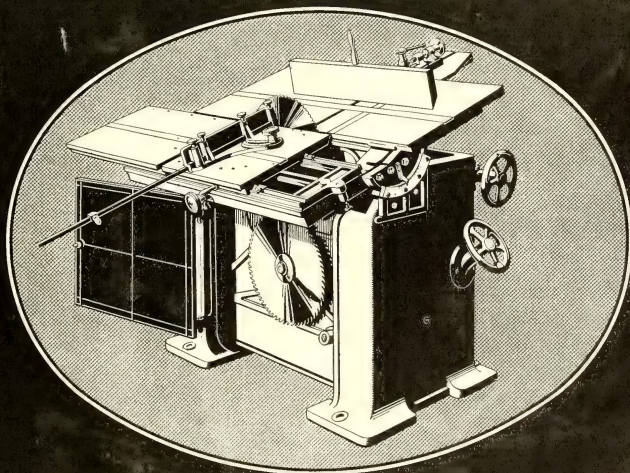
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"Do you understand what that means? And then cut off the engine and nosedive silent? Where? Should my calculation, my feeling prove correct? Thus we whizzed down hundreds of feet. If the clouds hung low, we were lost. If we flew on too far, drifted off by incalculatable wind gusts, we should not be able of escaping any longer. So we dived through; first through clouds, then through snow—suddenly the sea glimmers and we have the coast and the moles of Dunkerque before us, and below us two English destroyers and a huge number of mines.

"A violent token by me, a jerk and the engine starts. [Almost every German aeroplane is now fitted with a magneto self-starter], a sharp turn and some little flight in over the country. The road full with automobile transports to Nieuport. We flew so low that I could distinct make out a lonely motorcycle dispatch rider. I had seen enough—one turn and out to sea again, flying home as quick as possible. All was carried out as quick as thought out, so that we were hindered by no one or nothing; only some quick-fired shrapnells burst below us without any result. Out to sea we were shaken by violent gusts, and thrown up and down, oft 300 feet at a time. From Nieuport they fired furious at us, quite big fun. In Westende we flew across our shore, observing the shells dropping below and landed safe to report."

A German flying officer has written: "The danger has grown to us their anti-aircraft guns placed in . . . making a fine shooting. Oft the shells burst but fifty yards and less off my aeroplane, carrying several plasters from hitting pieces, which were, however, harmless hitherto, and even in spite of my flying 6,000 feet high. Of those of our aviators engaged . . . names are to be found on the casualty list as shot down, fallen down, or taken prisoners. Ill-treated we have got by 'the terror of the peasants,' a Farman biplane with machine-gun, two engines and a crew of three men, against which we were the weaker, as he was armoured and flew quicker. (Has it not likely been either a Dorand or one of the new short-horn type Maurice Farman with 12 cylinders, 120-h.p. Renault engine?—E. H.) We had a bad fight with this aeroplane by —. At a distance of 25 yards he stuck very exciting just down at us at a height of 2,100 metres. We saw the man serve the machine-gun, saw even the fire. We shot at him with our pistols, but in vain."

Now all three Danish aviators, doing voluntary service in the French army, possess the "médaille militaire," this highly esteemed reward having now been awarded Uffe Jensen for valuable service, as it was earlier to Seth Jensen and Krause Jensen.

According to reports from Berlin, told to be based on official sources, the Germans have lost since the beginning of the war: 14 submarines, 9 Zeppelins (likely to stand for airships), and 100 aeroplanes (which last figure looks rather low). During the war months the new buildings have amounted to: 10 submarines, 5 airships, and a big number of aeroplanes.

For a long time it has been known that German flying officers made service with the Austrian troops on the Eastern frontier, but now news are available that Austrian aviators

have flown on the Western theatre of war, as will be learned from the letter below from the Austrian aviator, Anton Haska, published in the Hungarian newspaper, "Az Est":—

"First, I fought against the Serbs, where I made patrol flights over their positions, when I got the order, via Berlin to go to Antwerpen, which was already surrounded by the Germans. Our task was to observe the results from the Austrian motor batteries, and when they were fired to our indications, and these motor batteries rendered the Germans good services. From the air we saw the havoc they caused; they ruined the Southern part of Antwerpen. Our longest flight, we made over Antwerpen, where we stayed in the air without intervals for 18½ hours! Already in Berlin we had received exact maps of the fortress, and to the indications of them we dropped bombs, but as we learned afterwards the 16 bombs dropped had only caused little harm.

"When Antwerpen had surrendered, we flew along the Belgium-French coast to Paris. The Austrian artillery which had taken part in the siege of Antwerpen, was already engaged by Yper. After an aerial voyage of several hours, my observer, Oberleutenant L., turned my attention to the fact that Paris lay before us. The necessary preparations having been done, we dropped six bombs on Paris, and noticed that at least one had caused much harm. We descended further to get some photographs from the air, when we saw six to eight aeroplanes fly towards us, at once we rose beginning to flee. But the Frenchmen flew quicker, overtook us and kept banking so that they forced us down. Already we had given up all hopes, when a German "dove" appeared. The German aeroplanes are armed, too; so the monoplane opened a fire on the French aeroplanes, which were compelled to flee letting us room.

"Our flights over the French capital did not last long, as we were ordered back to Tuzla, where we were used for patrolling the Serbian positions, and we witnessed how the Serbians were driven out of Bosnien. It was evident that they had improved their anti-aircraft war since my first flight in August, as we learned by Losnica, where we were exposed to shrapnell fire from three sides. A shell smashed the chassis of my aeroplane, and the Oberleutenant cried: 'We must take leave of the life, Anton! The . . . have hit us!' I stopped the engine, beginning a 'vol plané,' but what followed I do not know. I lost the conscience and did not awake till in the hospital at Esseg, when a nurse washed me the face. There I learned that we had been brought down into the Drina river, that even when falling I was hit by another bullet and later broke the one foot, too, my Oberleutenant had got severe wounded and is now nursed at a sanatorium. I hope that both of us soon will be able to fly again."

THE REAL MEANING.

It is said on absolutely unreliable authority that a small child who had applied unsuccessfully for a commission in both Services, and who was therefore filling in his time by telling mamma how the R.N.A.S. was run, was heard to indicate to his parent, in all the pride of a knowledge of the inwardness of things, that the curly "executive" ring on the cuffs of the different "prob-sub-looks" and squadron commanders scattered about the aerodrome indicated that they had all looped the loop!

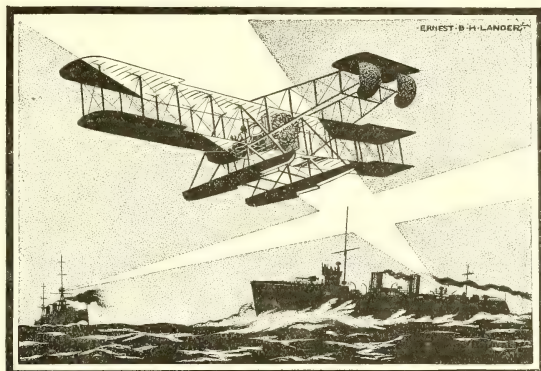


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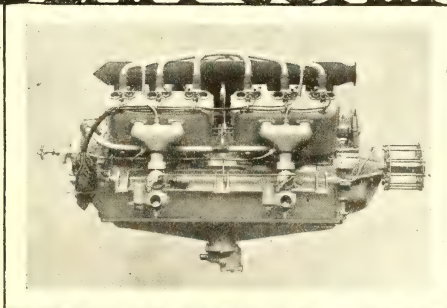
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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

"Where are you bound?" said Life to the Boy. "I don't know, thank God; but I'm bound to get there," said he to Life, "for the road's open, if it's a long one." So he went on whistling for luck until he met the Devil or a young witch—and stopped awhile. . . . Or perhaps, being a very strong-minded or a very dull lad—often the same thing—he did nothing of the sort, but left her gazing, and went on until he got there, to great success and great failure—likewise different ways of spelling the same thing—when he was very old and cold, and the dear warm witch with all her brown hair was long dead, and all the laughing children they might have got were never born. Then said Death to the Boy that once was: "Lean on my arm, and I will lead you back to Her and all that might have been." . . . So at last he really awoke, and that was the end of the story. Which is pity of most stories of human engineering. But he started out right, anyway.

Now, motor-design—like that other frail kind—is also very much the bastard of chance and occasion, the best of it; for the legitimately begotten children of formula and slide-rule seldom go far outside the text-books. Given the initial object and any sort of departure-point, one shapes the course as much by tide-chance as compasscraft, to come at a landfall, somehow; not so much this particular how or that one. Which best way is the spirit and true intent of all that we know as Invention, or shall ever know. To which, therefore, the set prescription of anyone else is fetters, chains, and death.

THE LEADING QUESTION.

That is why—to take the special case of the Anzani ignition as I left it—it does not matter how crank-shaft and magneto-spindle are relatively gear-yoked to their job of treading out the corn of power, so long as the main outcome, the relative pace of one and the other, brings spark and instroke together at the given moment, in what has already been shown to be the inevitable rate.

Then—may we dissemble. But before that comes one other question: Why are all the Anzani models, save one, designed with nothing to give the connecting-rods any sort of lead, clockwise or anti-clockwise, like the Salmson, equally a radial, the main internal design of which has to be ordained to that same end? With two cranks set diametrically opposite, in all but that one case, surely there must be dead-points? The answer—to some extent apart from the fact that the Salmson is cylindered by sevens and nines—is that with the working or stroke cycle of the Anzani, arranged as it is by missed cylinders from 120 degrees down to 72 degrees apart, in the Y's, their duplicate sixes, and the double-five ten respectively, neither of these respective degree-segments represents any even quantity—such as a quarter, much less half—the revolution circle. Therefore, relatively to the crank, no such thing as a dead-point can exist, as it may do in the Salmson, despite the uneven number of the cylinders.

Then to this we must reckon the fact that in the Anzani—and this is probably the basis of the whole story in this respect—our old enemy inertia has been brought into friendly use; that is, that the inertias of the respective sets of moving parts are *normally and permanently out of balance*, and are only brought into temporary balance while such balance is essential to smooth running, during, and by means of, the actual power-stroke on any given set. Consequently the moment work is checked—as by cutting out mixture or ignition—inertias come in again, little by little restoring the "unbalance," always predominating—until the motor is set

going again or stops outright—and therefore always *automatically* leaving the moving parts with a distinct lead in the original direction. Obviously then, in the circumstances, no special arrangement for that purpose is needed in the Anzani, and the weight thereof is saved.

With the Salmson, on the other hand, seven goes nowhere exactly into 360. Therefore the case is merely one of the power of an extra cylinder being brought in—just as in a row of seven verticals—and so some special lead-arrangement must be provided. As we saw long since, this is done in the most effective way; which puts all respective inertias into balance, not only with the power-stroke in one set of moving parts, but permanently more or less with one another; the odd seventh—or ninth—just enabling this to be done.

The case of the nine-cylinder is not much better. Certainly 9 divides 360 evenly into 40-degree spaces. But as the firing goes, it is only 80 degrees from one firing to the next power-stroke; nothing like the 120-degree inertia-swing—or drag—of the Anzani to ensure the established lead. So just as much the excellently devised lead-arrangement of the "seven" must remain, leaving the "nine" or any other Salmson model *purely* a high-power producer in absolute radial balance permanently.

STRIPPING THE TRIMMINGS.

Now, we may take the Anzani to pieces, remembering all that comes in usefully from the Gnome or the Salmson way of doing the job, as to lay-out, plan and method—with the reservation that none of the three is a bit like the others—and religiously forgetting the rest for this purpose. As before, first slack off all pipe connections from petrol and oil tanks, and the pipe leads from the oil pump. Put them all in the kerosene trough. Item: There should be several of these last, standing on a handy table exactly in the fashion of the antiseptic dishes you dimly remember through the nightmare of ether, and pain, "frow-up" and white-bowed nurse, after you fluffed that last landing.

Then remove the carburettor, and set by for second last replacement. Then the magneto and distributor, noting exactly the leads of the wirings—to plug all of which remove at the same time—and making your own identifying marks on adjacent parts—especially gears—to correspond precisely in their respective relations, and save yourself time and uncertainty in the assembly. Put these by for absolute last replacement.

TRACKS AND RETRENCHMENTS.

Next, unship the motor bodily from the aeroplane, and get it down, rearside upwards, on much the same sort of operating table as you had for the Gnome; but, of course, made for the Anzani number of cylinders. Then, like Wilkins, of Bath—only having no gloves on—"remove the liver": the swarty in this case being the valve gear. However, take special care not to turn the crank-shaft over a hair's breadth, for there are no little holes to insert any staple through, to lock the gears and pinions. Mark then, one and other of these last in one fairly deep and straight groove along the centre line of deepest engaged tooth-side and space, and across from space-centre towards pinion or gear centre. So when these two radial grooves come in line at the assembly, you will be on another cold certainty.

Now, marking as you go—but, of course, only where you dare, and do not touch working surfaces—unkey the gear from the cam-sleeve, and draw off the latter. Then you will find all the riser tappets push in freely far enough to enable you to remove the rodwork without interfering with its length-adjustment. Get the rockers clear; and then each induction lead will be free to come



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away bodily from the cylinder and crank-chamber casting—the induction ring to be exact—as soon as the nuts are slackened off the cylinder. Then cast loose the colonettes, one cylinder at a time, not forgetting to set the nuts on the colonettes after that cylinder has been withdrawn, valves and all.

Next, cylinder by cylinder remove the valves, noting specially the condition of the exhaust valves, and the compression-strength of the inlet valve springs. An a.o. inlet valve is only a mixture-stream interrupter rather than a true cut-off, when all is said. To act at all efficiently in the latter capacity or even as an interrupter, its spring must be within a very slightly adjustable margin of perfect condition, or it is useless. If, then, the spring seems weak even near the margin limits, let alone outside them, throw it away. Look, likewise, hardly less strictly at the exhaust valve spring; and specially scrutinise the condition of the valve heads and stems for the slightest sign of pitting or distortion. The former, if not too marked, can, of course, be cured in the usual way by grinding in: but the latter is hopeless, so throw the valve away.

ROCKER-MOTION RESULTS.

And the reason you must look for it—rather expectantly, to be quite frank with Mr. Anzani for the sake of the great reputation of his motors—is this, that although the fulcrum pillar of the exhaust valve rocker is judiciously set as far back from the exhaust valve as possible, and the rocking point slightly below the level of the valve button, so as to make the nearest attempt at a perfectly vertical depression—that attempt falls a little short of success even so, because the valve stem motion, being vertical, becomes tangential to, instead of coincident with, the circle of the rocker's radial motion.

This essential feature—if valve stem distortion is to be positively avoided to impossibility—is the chief motive for diagonal valve-setting; and even then the exact coincidence of motion-paths is missed by designers, often as not. But where it does not exist—it never can in any vertical-valved, flat-headed motor, if the awful truth must be told—there, as I say, you may expect valve distortion, or, at least, the tendency thereto.

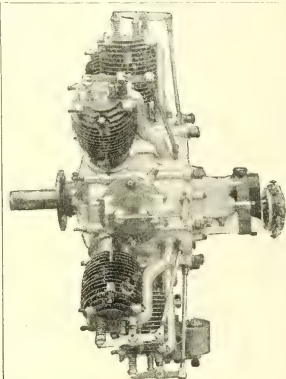
At this stage, we have left the pistons exposed. So not to give them a chill by undue delay in bedding them in oily waste, slack off the nuts of the cross-bolts, draw out the latter from the colonettes, draw both free, set one through other again, and re-nut. Then the back half of the crank-chamber may be lifted clear, and the cranks and connecting-rods exposed in turn. Next, loose off the cotter-bolts from the halved collars—not forgetting to curse the absence of that single locking-bolt and built-up crank-shaft that would save all this box-spanner conjur-

ing and barked knuckles—and shoes, rods, bush and pistons will come away freely. Perhaps too much so; the knack here being to prevent the lot falling away; which is done by merely slacking the undermost cotters sufficiently to let the collar open enough to retain a grip of each shoe, and yet allow it to be slipped out in its turn.

Together with the removal of the back half of the crank-chamber—or directly afterwards—you will already have removed the main rear ball-bearing: so everything else being away, you may now reverse the motor bodily, and lift the front cover clear in the same way as the back one, and proceed as before to clear cylinders and internals. This will leave the crank-shaft—which should have been supported beneath its undermost web to prevent it dropping bodily, or, at best, straining the front shoe connections with its weight—all but naked. All that remains, then, is to strip off both ball-races and lift it away to be doused out internally with sundry syringings of kerosene; all other parts being likewise subjected to the same washings, before re-anointing with their normal lubricant.

This last must always be done—or re-done—the last thing before re-assembly. For which, simply proceed “backwards-on,” as the motor was taken down. And it is mostly in the final adjustments that you will feel up-lifted like the just, or Mr. MacAndrew's tail-rods, because you remembered those little identification marks. So—though he hardly seems to need it—more power to A.A., and motor-cycle practice; thoroughly done. All that might have been.

(To be continued).

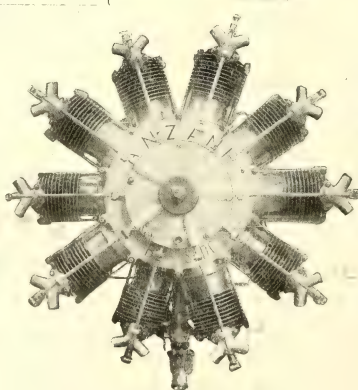
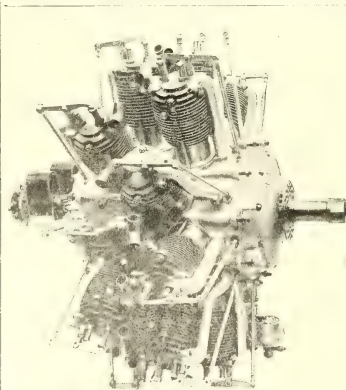


Side

View of

the 10-cylinder

100-h.p. Anzani.



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200-h.p. motor.

On the right
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Small Factory Output and How to Speed It.

BY GEORGE H. MANSFIELD (Joint Author of "The Motor Accountant" and "Repair Shops and Stores Accounts").

CHAPTER VII.

RAW MATERIAL, STORES, AND ARRANGEMENTS.

While the organisation of Stores generally, and particularly the Accounting in connection therewith, is fully dealt with in "Repair Shops and Stores Accounts,"* the particular details of this department, so far as they concern the actual factory and the question of raw materials, are now considered, and for such purpose we will consider the case of a factory in which it is necessary to hold a stock of metals varied both as to dimensions and kinds.

The arrangement of such stocks should be made, while bearing in mind the object of obtaining facilities for receiving the material into store and issuing it again for use in the factory.

Referring to the plan, it will be seen that illustrations are given for facilitating the handling of raw material. The receiving department is connected with the stores by a wide passage along which consignments of rods, bars or plates can be wheeled on a trolley, and when in the stores can be dealt with easily before being turned into the respective racks.

The inspection of all raw material should take place in the receiving department so that quantities which cannot be accepted for use can be returned without labour being entailed in taking the same to the stores and back again to the receiving and dispatch departments. Further, the risk of such rejected material becoming confused with that which has been passed for use is thus avoided.

It is a good plan to have a series of marks to represent the different kinds of material stocked from time to time. Such marking of material should take place in the receiving department under the supervision of the inspector.

In addition to these marks the allocation and ultimate issue of material can be facilitated by the size, dimensions, and (or) gauge being painted on the end of each piece, although this is hardly necessary when dealing with plate, where the dimensions are usually standard, and the gauge is obvious or easily checked.

A list of colours, such as is used as a standard by the Royal Aircraft Factory, will show the method as defined, although the substitution of certain colours for others, and the addition of private marks, may be advisable, and may be found useful in some factories.

* "Repair Shops and Stores Accounts," published at "The Trader Offices," 19-21, Wilson Street, Finsbury, E.C.

The marking of all rejected material with a plain mark as included in the following list will ensure the return of such material, and should be a safeguard against the possibility of any getting through and being used in the factory.

IDENTIFICATION COLOURS FOR RAW MATERIALS.

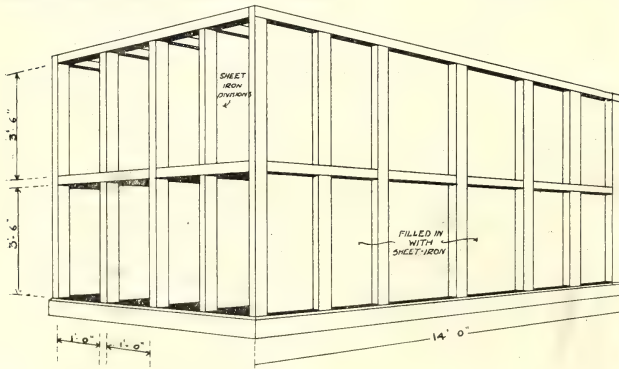
Rejected (x)—Cherry.
High tensile steel bar (55 ton)—Vermilion.
H.T. steel forging material—Bright green.
Mild steel bar (35 ton)—Yellow ochre.
M.S. forging material—Bright blue.
Air hardening steel (100 ton)—White.
A.H.S. forging material—Black.
M.S. sheets—Yellow ochre.
Delta metal bar—White.
M.S. tube annealed—Yellow ochre.
H.T. sheet steel (best)—Vermilion.
Gun-metal bar—Vermilion.
Delta metal stampings—White.
M.S. tubes not annealed—Vermilion.
Delta Metal tubes—White.
40-ton steel forgings and stampings—Yellow ochre.
H.T. steel tubes (B)—White.

Before each consignment of material leaves the receiving department, it will be painted with its colours, and size, dimensions and (or) gauge. The end of each bar, tube or rod can be painted round with the distinctive colour, and the details as to size, etc.

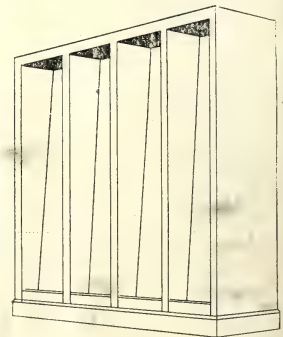
As each consignment is received into the stores, it will be put away in the respective racks, the racks being arranged so that each length can be put in and taken out for the marking-out department easily, the most convenient length of each rack being 14 feet.

These should be arranged, as shown on the plan, at right angles to the shops. The racks should be arranged with divisions for each different kind or size of material, the width of each division varying from 2 feet at the bottom to 6 inches at the top.

The object of this is that the heavy material, such as 6 inch diameter round or square bar, and tool steels can be easily "racked" and drawn out from the bottom, while the intermediate and smallest sizes will be arranged accordingly, such light materials as copper tubing being at the top. The convenient height of such racks will be found to be not more than 6 feet, and the weight of mate-



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• ROD BIN •
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WIDE AND TO ANY
REQUIRED HEIGHT
10, 12 OR 14 FEET

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MOTOR Co., LTD.,****Monoplanes, Biplanes,
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H.M. Government****CELLON LTD.**
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rial it is thus possible to store will be sufficient for any ordinarily constructed racks of this description.

The storing of sheet metals or plates can best be arranged in a rack, with partitions as shown, each about 1 foot apart and 6 feet 6 inches to 7 feet deep. The sheets or plates can be laid on the side edge, and thereby, with a strongly constructed rack, the whole can be divided into two separate lots of racks, as shown on the plan, thus providing for the heavy gauge sheets below and the lighter gauges above, a space being provided over each set for the identification labels of the details of the contents of each division, such details being more convenient if they include the maker's name, the description of material, or specification number, and the gauge.

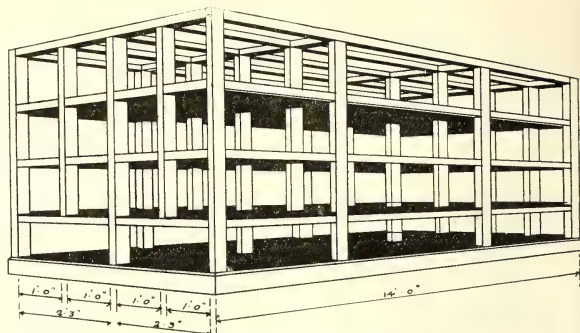
In order to facilitate the convenient issuing of materials required, the installation of a good powerful hack-saw machine, two pairs of good shears, and a good slitting saw for cutting tubing, will be found useful in the marking-out department or raw material stores.

A question which, especially in these times of irregular railway transport, is of importance in circumventing difficulties in keeping the shop fed with material is an efficient system of "minimum stocks."

Although such a system, in these times, will not necessarily positively avoid delay in the supply of material, it will assist in keeping up the supply of the more common descriptions used.

If, whenever a contract is received, such material as may be required is at once ordered, the minimum stocks should enable the work to be commenced, and the first deliveries to be made, by which time previous orders will generally be received, and so on.

With a system of this kind it is possible that certain descriptions of material may be in stock for long periods. But, on the other hand, the actual possession of a stock of certain material may enable a factory to accept an order which it would not be expedient to accept if the question of obtaining a necessary stock had to be taken into consideration.



• TUBE-BAR-AND-ROD-RACK •
• Lower Division For Tool Stocks Etc. •

The minimum stock list should be in possession of all persons directly concerned in the factory output, while all questions necessitating the use of larger quantities or any quantity nearly up to the minimum stock should be communicated to the purchasing department without delay.

In like manner the purchasing department should periodically review the minimum stock lists for the purpose of adding thereto any material it may be deemed advisable to hold for stock.

NERVE TONIC.

Mr. Ralph E. McMillen, of Kansas City, Mo., is an aviator of ready wit. On a certain occasion when the wind was so strong that hats had to be held on, the rough and ignorant spectators began to threaten damage, whereupon Ralph jumped upon a crate and addressed them in the following words:—"You are compelling me to fly against my better senses. I don't want to fly. I know the wind is entirely too bad. I probably will be killed, but I will fly—on one condition. You must select one man from among you to ride in the passenger seat. I'll need weight to steady the machine in that gale. Pick your man and we'll start right up. . . . Get her ready, boys." The mob reconsidered its opinion. This reminds us of Mr. Compton Paterson, who, under similar circumstances at Cape Town, grabbed the most vociferous spectator, hauled him into the machine, and frightened him half out of his senses by letting the machine pitch about as the wind liked.



SOME HALL SCHOOL PUPILS.—Top Row: Messrs. H. H. James (Instructor), F. E. Goodrich, J. A. Jonge, C. M. Hill (Instructor), H. F. Stevens (Instructor). Second Row: Messrs. P. Snowden, P. Bayley, Lieut. Jowett, E. Wilkins. Front Row: Messrs. C. Cook, E. A. Gay, J. L. Hall, A. E. Hatchman, J. D. Booker, B. Francis (Manager), Lieut. J. R. Phillpott.

ACCELERATING PILOT PRODUCTION.

It is rumoured, though no one believes it, that the Grahame-White char-à-banc has now been fitted with quintuple controls, and that anyone who gets up early enough may see the moving spectacle of the gigantic machine moving round the aerodrome in all its stateliness, carrying five grim-faced probationary flight sub-lieutenants, each grasping one of the five steering-wheels with determination, and obeying the orders of the instructor, who, standing gracefully on the front main spar of the left wing, with his arms and legs coiled up round the outermost inter-plane strut, shouts through a megaphone of large dimensions, "By the right! Three points to starboard!"

A RETURN TO BUSINESS.

It is stated that Flight Lieut. Sidney Pickles, R.N.A.S., has received permission from the Air Department of the Admiralty to resign his commission in order to test new machines for one or two of the leading contractors. There is, of course, a great deal of important work to be done

in this direction, and several applications had been made for his services which could not be entertained while he remained an officer of the R.N.A.S. The Commonwealth Government had asked that he might return to Australia to train pilots there, but it was thought best that he should remain in this country. Only a few weeks ago one of the Australian papers published a highly appreciative article on Mr. Pickles, stating definitely that he had been appointed a captain in the Australian Flying Corps.

GARMENTS FOR AVIATORS.

Dunhills, Ltd., are already famous for supplying the motorist with "everything but the car," with the exception, that is, of the money to pay his fines; and possibly in the near future they may be able to make a similar claim in regard to aviators. A visit to their head showrooms in Euston Road reveals the fact that they now stock many kinds of garments and other articles of special interest to those who fly.

Their black leather three-quarter length jacket is well

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

known, and they have recently introduced two new full-length leather coats of unusual elegance, one in tan and the other in khaki. Buttoning well over the front, with draught-proof collar and cuffs and capacious outside pockets, these garments are not only handsome but most comfortable, and, speaking from personal experience, the aviator who tries one on will take it off with reluctance. A special feature is the easily detachable lining.

Dunhills also have on show a variety of headgear. There are leather caps with beaver flaps, and some with scarf-ends added, and some of Balachava type, and others neatly padded. [Is this supposed to be prose?—Ed. . . Sorry.—D. W. T.] Light but weather-proof vests of chamois leather or oiled silk, lined with wool, are also distinctly useful, and there are many kinds of goggles, gloves, and other articles suitable for air service.

A REAL LOCK-NUT.

A lock-nut that is fool-proof, self-contained, locked and unlocked quickly and easily with an ordinary spanner, used indefinitely without damaging threads, and unaffected by dirt, oil, water, heat, or vibration, will at once command the respect of every engineer, particularly those concerned with the aircraft industry. The Vislok, invented by Mr. W. Clay Peters, is so simple and effective that a brief examination reveals its strong points at once.

In size the Vislok equals approximately one and a half ordinary nuts. It is made in two sections, which are forced together by hydraulic pressure, and are guaranteed inseparable. To put the Vislok on a bolt the spanner is applied to both sections, as in the case of an ordinary nut. To lock the nut the top section is merely given an extra turn, and the lock becomes absolute.

Visloks have been subjected to the severest possible tests, and have emerged triumphant every time. Even on the stamping machinery used on the Rand gold mines it has been entirely successful, where other nuts have failed. In the aviation world it should have a great future.

One sometimes sees in the West End, even in these days, a nut tight, but no nut was ever so tight as a Vislok.—D. W. T.

A NEW ACETYLENE WELDING OUTFIT.

A new portable acetylene welding outfit is just being put on the market by the Acetylene Corporation, Ltd., of 49, Victoria Street, S.W. It is extremely compact and efficient, having been specially designed for repairs to aircraft in the field, and should be invaluable on active service. It is hoped to describe it in further detail at an early date. Meanwhile all manufacturers should write for particulars, for such an outfit should be of great value to break-down gangs and to crews in charge of machines on test at distant air stations.

A NORTHWARD MOVE.

Mr. J. D. North, who until recently occupied the post of head designer to the Grahame-White Aviation Company, has now transferred his services to the Austin Motor Company, Ltd., of Northfields, Birmingham. He will have the best wishes of all who know and appreciate his undoubted abilities. Both employers and employee are to be congratulated.

THE WEEK-END AT HENDON.

Saturday was, for once, a fine day. Visitors making their way through Kilburn towards Hendon about 2.30 could see a Maurice Farman at a great height descending spirally in the direction of the aerodrome. It seemed a good omen, and as a matter of fact it was the prelude to a good deal of interesting flying.

Mr. Osipenko was naturally early on the scene with a 50 G.-W. biplane. Mr. Prodrer then went up on a 40-h.p. Beatty-Wright, but had not gone very far when

a propeller shaft broke and a propeller fell off. He switched off his engine promptly, and the machine came down without a swerve. In the distance it merely looked as though the pilot had dropped his umbrella, so calmly did the incident occur. Mr. Prodrer was out a little later on the 50 Gnome Beatty-Wright.

Messrs. Baumann and Virgilio made many flights on Ruffy-Baumann biplanes. Mr. J. L. Hall was taking a short holiday, but the Hall School was well represented by Mr. Stevens, who gave an exhibition flight that was highly spectacular. His banking and switch-backs were worthy of a veteran, and surprised even his school associates.

The Mann biplane was taken across to a distant part of the aerodrome early in the afternoon, where it lingered with all the modesty of a violet until tea-time, when Mr. Ding made an encouraging test flight. He was using the new Chauvière propellers, and achieved about 75 miles an hour.

Mr. Roche-Kelly flew the 45 Beatty-Caudron, leaving later on for Leeds, where he was due to give demonstrations on Bank Holiday. Mr. Winter carried passengers on the 50 G.-W. box-kite, and Mr. Osipenko

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did the same on a larger scale with the aid of the five-seater.

In the evening a good deal of school work was done and three tickets were taken.

On Sunday, Mr. Ding made further tests with the Mann, reverting to the original Mann propellers. The petrol supply, however, restricted the length of his flights to nine minutes each. The upper tank only held a quantity sufficient for that time, and the petrol in the lower tank refused to be pumped into the upper, and further adjustments will have to be made to defeat the laws of gravity. The machine appeared to fly well in a gusty wind which registered up to 35 miles an hour.

Mr. Osipenko worked very hard on a G.-W. box-kite. Messrs. Baumann and Virgilio were flying occasionally, and Mr. Prodger also came out. At 5.30 the wind calmed down sufficiently for a number of passengers to be taken up, some of them in the five-seater, which was still busily employed when THE AEROPLANE representative left at 7.30.

On Monday, unfortunately, the weather was about as bad for flying as it could be. A high wind prevailed, and heavy showers spoiled the programme altogether. Mr. Prodger made a short flight on a Beatty-Wright, but it was uncomfortable, and he could not indulge in the Beatty style of banking, which would have been so appropriate on a Bank Holiday. By the law of averages the Hendon Aerodrome should now be in for a long series of fine week-ends.

The steady demand for passenger flights, which often lead to a new pupil joining a school, offers a useful field for enterprise. It is understood that two of the latest additions to the industry are Messrs. Eric and R. W. Redgrave-Gunner. These brothers are certainly young, but they hope to make up in enthusiasm what they lack in experience. The first-named has travelled practically all over the world in the service of the Royal Mail Steam Packet Company, and started to learn flying at the British Caudron School.

When that firm left the Hendon Aerodrome shortly after the outbreak of war, he joined the London and Provincial School, and took his brevet a week ago. A 45-h.p. Anzani Caudron is being built for the brothers at the Caudron works, and delivery is expected shortly. It is similar to the Admiralty type, and is specially adapted for passenger carrying, having a comfortably padded seat, non-slip flooring, and other features. Messrs. Redgrave-Gunner hope to establish a school of flying. Such is the ambition of youth.

Among the crowds that watch the school-work at Hendon one hears many quaint remarks at times. During the past week-end a family of distinctly rustic appearance lingered in the enclosure after the exhibition flights of the afternoon had come to an end, and one of the pupils commenced to practise straight. After he had made half-a-dozen return journeys across the aerodrome, one of the family excitedly called out: "Come 'ere, Mother! Look at this feller—'e's 'ad about six tries and 'e can't make it stay up no-how!"

There is no more energetic instructor at Hendon than Mr. Virgilio, and his pupils at the Ruffy-Baumann School appear to be making excellent progress. He frequently has two school machines in commission, and in the case of any trifling mishap, such as the breaking of a wire, the alacrity with which he jumps from one machine to the other is quite amusing.

The latest story concerning him bears on his unconventional but expressive use of English. A pupil had repeated a rather dangerous mistake more than once during the morning, and Mr. Virgilio was fearing a smash would ensue. His rebuke was a masterpiece of terseness: "You fat-head! You born—you die!" As a summary of a person's whole existence and his usefulness it would be hard to condense further.—D. W. T.

PILOT PORTRAITS



The F N B Series of Copyright Pilot Portraits includes all the most notable Pilots of the Flying World. Unmounted, post free, Sizes 12 by 10 in., 28. 6d.; 8 by 6 in., 1s. 6d.; 6 by 4 in., 1s. 2d. Mention THE AEROPLANE and write for NEW LIST of 350 pilots.



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ENGINEERS desiring to apply for the vacancies for Examiners and Viewers in the Aeronautical Inspection Department should send an account of their accomplishments, including details of their engineering experience, to the Chief Inspector, Aeronautical Inspection Department, South Farnborough, Hants.

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SPOWITH biplane, 21s.; Deperdussin monoplane, 6s. 6d.; Blériot Canard waterplane, rises off water, 27s. 6d.; floats, wheels, angle pieces, propellers, rubber motors complete, rotary compressed air motors. Send 3d. stamps for complete illustrated catalogue.—Smyth Aeroplane Company, 30, Homefield Road, Chiswick, W.

TO LET.

LARGE factory at Weybridge to let from September; alongside Thames and complete with Gas Engine, Woodworking Machinery, Shafting, Gas, Electric Light and Water.—C. Horsell, Weybridge.

A NEW SCHOOL AT BIRMINGHAM.

The Midland Flying School, Billesley Common, King's Heath, Birmingham, started work regularly on July 23rd. The chief instructor is Mr. S. Summerfield, who has done quite a good deal of flying in the past two years.

The only machine in use at the start was a 50-h.p. Blériot-type monoplane, but a similar machine is being erected, and it is hoped that the expansion of the school may permit of other machines being added before long.

Among those at present at the school are Messrs. Monfie, John Tzesing, C. Cheung, T. K. Lee, J. Munion, and K. N. Chan.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast	...	Fine	Wet	Fine & to Fine	Fine to Wet	Fine	Fine
South Coast	...	Fine	Fine	Fine	Cloudy	Fine	Fine
Midlands	...	Calm	Stormy	Calm	Windy	Stormy	Fine
London	...	Fine	Fair	Show y	Show y	Fair	Fine

HENDON.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Pupils doing straights or rolling alone: Messrs. May, Gardner, Liddell, Raiton, Owens, Belton, Young, Bailey and Fitzsymons.

Pupils doing figures of eight or circuits alone: Messrs. Mathewson, Dixon and England-Derwin all at good height.

Certificates were taken during the week by Messrs. E. C. England-Derwin, Lieut. Dixon, Lieut. Kenneth Mathewson and Herbert Sykes.

Machines in use: 50-h.p. Ruffy-Baumann, 60-h.p. R.B., and 50-h.p. Caudron type biplanes.

The weather has not been good, but in spite of that four brevets were secured in very good style.

AT THE LONDON AND PROVINCIAL CO.'S SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren and James.

Pupils doing straights or rolling alone: Messrs. Wynne, Eytton, Roe and Woodley rolling. Messrs. Chapman, Welsford, Burton and Moynihan straights.

Pupils doing figures of eight or circuits alone: Messrs. Everidge, Irwing and Jacques.

Capt. Everidge made a specially good flight on the 29th inst. when passing for his certificate, and Mr. G. Irwing took his brevet in good style on the 30th.

Machines in use: Three tractor biplanes.

AT THE HALL SCHOOL.

Pupils receiving instruction with Mr. H. F. Stevens on brevet tractor No. 2. Messrs. Booker, Gay, Snowdon and Lieut. Philpott all doing circuits, figures of eight, and landing practice.

Pupils with Instructor C. M. Hill: Messrs. Gordon (34), Bell (14), Milborne (6), Hatchman (16), Huggan (13), Goodrich (21), Watson (16), Bangs (27), Bayley (10), Yonge (10), Cook (4), Littlewood (33), Russell (8), Drew (17), Punnett (8), Hamer (6) and Lieut. Jowett (20).

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Barrington, Dallas, Perham, Roach-Piersen, Smethurst, Hodges and Beare.

Pupils doing straights alone: Sub-Lieuts. Douglas, Sievking, Perham, Barrington, Dallas and Hodges.

Pupils doing circuits alone: Sub-Lieuts. Barrington, Douglas and Perham. Circuits and eights: Sub-Lieut. Pearson.

Certificate taken during the week by Sub-Lieut. Wyllie.

Machines in use: Grahame-White biplanes.

BIRMINGHAM.

AT THE MIDLAND FLYING SCHOOL.

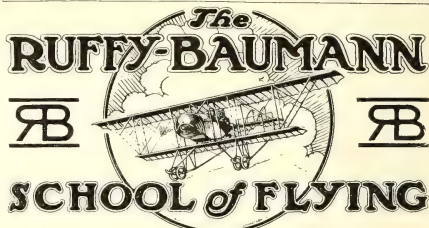
Instructor for the week: Mr. S. Summerfield.

Pupils with instructor: Messrs. L. Monfca, C. Mento, J. Tgesing, C. Cheung, J. Munion, C. Chong, W. Watson, K. M. Chan and S. K. Lee.

Pupils doing straights or rolling alone: Messrs. S. K. Lee, L. Monfca, J. Munion and C. Chong.

Machines in use: Blériot monoplane (50 h.p.).

The school has under construction a 45-h.p. biplane, and it will probably be ready in the course of a month. The pupils are busy at work in the hangars erecting a two-seater Blériot, which will be ready in a few days, wings being recovered, etc



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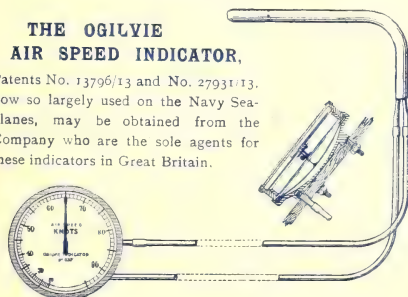
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THE AEROPLANE

WEDNESDAY, AUGUST 11, 1915

Edited by
C. C. Grey

Vol. IX. No. 6

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ON SERVICE AIRCRAFT.

Seeing that the Flying Services have now been actively engaged in war for just on a year, it may be well to consider briefly some of the things that have been learned in connection with aircraft in that period.

The Royal Naval Air Service was actually turned out at full strength for the so-called "Review" at Spithead in July, 1914, when the Fleet mobilised as a warning to Germany. Incidentally, one would dearly like to know whether the postponement for a day of the King's visit to the Fleet on that occasion was caused by the critical state of affairs in Ireland—as was generally believed by the Navy at the time—or whether it had to do with Foreign Office business. This is one of history's little mysteries that someone in high places may make known some day.

That mobilisation certainly went far to bottle up the German Fleet and to prevent fast German cruisers from breaking out to the High Seas and damaging our supply ships, and therefore it will always remain as a monument to the ability of Mr. Churchill and to the foresight of Prince Louis of Battenberg. But another of the little mysteries one would like to have solved is whether there was truth or not in the story that the hint to mobilise came from Italy, where someone got to know of a personal message from the Kaiser to the King of Italy inquiring what Italy would do if England came into the war. The Kaiser has, it seems, only recently had the answer, but the result of the question was seen at Spithead in July of last year.

JUST BEFORE THE WAR.

However, it may be remembered that at the aforesaid Review the R.N.A.S. was only able to muster about 20 seaplanes all told, and about a dozen land machines.

A few weeks earlier the R.F.C. had held a concentration of all their available machines at Netheravon, and one day the naval and military attachés of all the foreign Powers were invited down to see the show. Among them were the German and Austrian attachés—very charming and courteous gentlemen who were excellent friends with our own officers—and if their eyesight was normal they were able to count thirty machines in flying order, and no more.

Now those sixty machines or so of both Services represented practically the whole aerial fighting force of the British Empire just before war broke out.

Just how many aeroplanes we possess now I cannot say—and if I could I naturally would not—but Mr. Tennant says that our Flying Corps has expanded in proportion to our Army, so it is a mere rule of three sum, provided of course you happen to know the size of the British Army to-day, and I am told that if you want to know that you have to ask Lord Kitchener himself, because no one else knows.

Still, everyone knew before the war that the Expeditionary Force officially numbered 175,000 and the Army to-day numbers some millions—between two and

five according to the extent of your optimism. Therefore we have the choice of two propositions:—

As 175,000 is to 2,000,000 so is 30 to x .

Or, as 175,000 is to 5,000,000, so is 30 to x .

The answers are $342^{\circ}857'142$ or $857^{\circ}142857$, respectively.

The recurring decimals probably represent the replacements per machine necessary weekly.

The accuracy of the answers is indisputable, but their truth depends on how far you believe Mr. Tennant's statement—and, as I have frequently remarked, Mr. Tennant has proved himself a worthy successor to Colonel Seely.

SCIENTIFIC ACCURACY VERSUS PRACTICAL TRUTH.

Which distinction between accuracy and truth may be taken as a measure of the value of the civilian technical departments which have done more than anything else to delay the supply of aircraft to both Services ever since war began, and to render such machines as were delivered less useful for service.

No one has more continually agitated for stability and strong construction than I have, but for Service purposes, where climb and speed are everything, it is only the futile academic mind which would sacrifice fifteen miles an hour speed and three hundred feet a minute climb in order to secure a form of stability which becomes a positive danger in the hands of the partly trained pilots who somehow pass out of some Service schools, or would insist on strengthening up machines of makes which have never broken in the air till they are unable to rise above 2,000 or 3,000 feet.

The trouble is that these high-class scientists are accurate to many places of decimals in their mere calculations, but they always forget or neglect the existence of some unknown, and sometimes unknowable, factor analogous in its effect to the part played by political veracity in my calculations. And that is why it is always safer to trust a plain engineer than a slide-rule scientist with a string of letters after his name and no solid workshop experience.

A DIGRESSION ON MUNITIONS.

Which, by the way, is one of the snags the Ministry of Munitions is up against. It appears that all the young gentlemen who are to "control" factories under the new Ministry must be members or associates or something of one or other of the self-constituted "learned" societies connected with engineering.

Now, any workshop boss who can turn out material in quantities knows that the suburban-polytechnic, string-of-letters kind of man is useless as a work-producer, even though he may be worth a couple of pounds a week to twiddle a slide-rule in a drawing-office.

The way to obtain these valuable strings of letters is to read before learned societies papers full of figures which send your audience to sleep so that they are not in a state to dispute your conclusions when you have

finished. The more boring you are the greater your reputation for wisdom in your particular society.

If you are young and courageous—or merely self-confident—you may make a reputation for cleverness by remaining awake at someone else's lecture long enough to note a few weak points, at which you will fire pertinent questions when question-time comes. The lecturer will ignore them if they really touch the spot, but you will be remembered by the junior members who are afraid to talk as "the chap who got home on that silly old buffer So-and-so," and the lecturer and the committee of your society will remember you as a young man to be watched and placated. And so, when you apply for your full membership or fellowship, you get it, quite as much because the seniors are afraid of you as because you are really a sound engineer.

You object that this has nothing to do with Service aircraft? Has it not? It is, in fact, a gentle exposition of the craft of using hot air, and hot-aircraftiness has had only too much to do with the Services.

AIRCRAFT CONTROL.

However, if exponents of hot-aircraft engineering in general are to "control" munitions factories, one may estimate the results by regarding the output of the original Hot Aircraft Factory, which in a matter of five years has produced two first-class aeroplanes, both the personal products of individuals, one of whom is dead and the other in the employ of another firm.

ON SOME LESSONS FROM THE WAR.

Apart from the lessons of official mismanagement—which it is to be feared we shall never learn—some of the lessons to be learned from the aeroplanes in use are worth noting.

The officers of both Services who have "been to see the war" are beginning to hold very strong opinions as to the types of aeroplanes needed, and as to the relative values of existing machines. In time, when sufficient of these officers have been killed and injured, it is possible that these strong opinions may outweigh the preconceived ideas of the scientists who sit at home and think out what they think the fighting people ought to think, and who, being on the spot, are able to persuade the high officials who order machines that they know more about it than those who have to fly.

The one theory, publicly announced before the war, which has worked out in practice is the division of aeroplanes into three distinct types—the big fighting machine, the two-seater reconnaissance machine, and the single-seater high-speed scout. This theory was supported by General Henderson, Colonel Sykes, and Colonel Bräncker, and may have been conceived by any one or all of these distinguished officers.

The peculiar thing is that no real effort was made before the war to produce distinct types in these three categories. The methodical Germans and the acute French have both produced fighting machines before we have.

It is true that right at the beginning of the war we had various types of "pusher" biplanes with machine-guns in front, some of which were and are fairly fast and good climbers, but when one talks of fighting machines in these days one means really big brutes that carry at least two machine-guns and can outclimb anything in the way of a scout they are likely to meet.

THE GERMAN LEAD.

The Germans certainly took the lead in this type of machine—at any rate, so far as getting it into the air is concerned, though I know of several capable young men in this country who had better machines on paper long enough before the German machines appeared to have got them into the air first if anyone had had the courage to build them.

Yet the number of men employed there is nearly sufficient to equip the whole R.F.C. with adequate aeroplanes if the hands were managed by engineers instead of by be-lettered scientists and the leakage of the motor trade.

With such an example before it there might be a lesson for the Munitions Ministry, where the list of officials' names reads more like a drapery trade directory than anything else. The Welsh draper may be an excellent organiser and money-maker—as is shown in Oxford Street, not to mention Walham Green, or almost any London suburb—but the Welsh engineer (apart from the coal-getter or speculator) has yet to be found, and so one can understand that undue value may be attached by soft-goods distributors to the strings of letters attached to the hot-aircraft merchants of engineering societies. An expert in window-dressing may easily be caught by window-dressing of a kind which is new to him.

But the real engineer who has won his appendix of letters by sheer hard work sees through all this kind of thing. And I do wish I knew the real reason why Sir Percy Girouard resigned from the Ministry of Munitions.

All of which is of interest to the Flying Services and to the Aircraft Industry, because it seems that the said Ministry has chosen to control some aircraft manufacturers.

Naturally, it is a trifle hard to find out exactly the specifications of the German fighting machines, but judging from casual conversations with men who have seen them, men who know men who have fought them or have been chased by them, men who have seen them bring down machines of the Allies, and men who have seen the wrecks of one or two of them, they are roughly of the following types:

First there is "Fritz." He is a biplane with a span estimated to be anything between 80 to 120 feet. He has two fuselages, each with an engine in front and a tractor screw, and a nacelle in the middle with an engine and propeller behind it. He is, in fact, very like the Caproni which was illustrated in this paper some months ago. Some people say he carries a semi-automatic gun firing case-shot or chain-shot in the nacelle, and has a machine-gun in each fuselage to stave off faster machines approaching from behind.

Opinions as to his speed disagree. Some people say he is deadily slow, but others say that he only looks slow because of his size. Some say that he can run away from a Bristol scout when all his engines are opened wide out, and that he generally flies with his engines, each of apparently 150 h.p., gently ticking over. This seems most probable, and would account for both the other statements from equally experienced and keen observers.

All agree that he can climb like a balloon, and is a decidedly nasty person to meet anywhere.

By the R.F.C. as a whole he seems to be regarded as an experiment, and is not held in any particular respect, except by those who have made his close acquaintance.

Next to "Fritz" come sundry two-engined machines, either "pushers" or tractors, with an engine on each wing à la Sikorski. Information concerning these is indefinite, because apparently they have confined their attentions chiefly to the French lines. Apparently they run to about 80 or 90 feet span, and are popularly supposed to have engines of 150 h.p. each—that is to say, 300 h.p. per machine. They are said to be very fast indeed, doing about 90 miles an hour, and to climb at an astounding rate. Apparently they carry a machine-

gun forward and another aft, the pilot sitting just behind the forward gunner.

The third type is the one described in the French notes last week. This has a single big engine forward, which is said to be a 200 or 250 h.p. Mercédès, 12-cylinder V-type, made up of two of the new 100-h.p. Merc. units placed V-fashion on a single crankshaft. The machine has a span of about 70 feet, and is faster than anything the French possess, except the racing Morane with which M. Gilbert abolished one the other day, and the only things to touch it for climb are the twin-Gnome-Caudrons, which, however, are said to be slower.

CAN WE BEAT THEM?

Whether we in this country have anything actually in the air to beat all or any of these three types I will not, of course, say; for naturally the first people to whom such machines would be introduced would be the German flying service—just by way of a pleasant surprise from the wrong side of their lines. But it may be taken that as soon as the German aviators have been met and beaten by superior French or British fighting machines I shall be very pleased to chronicle the fact, which need not be hidden when once the Germans know about it to their cost.

Meantime, our aviators, both R.N.A.S. and R.F.C., continue to bring down German machines, partly because the big German fighting machines are as yet few in the land, and partly because our individual pilots and machine-gun artists are better men than the Germans.

Which is just exactly why one gets so wild when one thinks of the lead the Germans have won despite warnings from everyone who could see what was coming, and when one thinks of what our pilots could do if they had German machines, German supplies, and German organisation to back them up.

Yes! Mr. Junior Flight-Sub-Loot., who have been in the Air Service for five minutes and think you know all about aviation, I know the Navy's Albatros is not as fast as some of the machines a benevolent Air Department has allowed you to smash, but kindly recollect that the said Albatros was a year out of date when the German Government permitted her makers to sell her to the Navy some fifteen or eighteen months ago, and that, beautifully made and reliable as her Mercédès engine is, the newer Mercs. are quite as reliable and give a great deal more power for the same weight and petrol consumption.

THE NEGLECTED TRIPLANE.

Those new German machines have to be beaten, but the question is, How? The Germans themselves know it, and are, in their thorough way, preparing to go one better. Hence the rumours, via Switzerland and the "Daily Mail," of a giant triplane of over 1,000 h.p., which is said to have flown well.

A would-be-considered-technical writer in a contemporary took it upon himself to poke fun in a plantigrade fashion at the published description of the said machine, suggesting that with such engines it was never likely to fly, owing to its being overloaded. Some day, when the aforesaid writer knows a little more about what has been done by the brain-wave departments of the Flying Services, he may discover something about the design of a freak which was to have been far more heavily loaded than even the German machine at which he scoffs.

As a matter of fact, the Germans apparently believe in light loading, so he and others who may feel inclined to laugh at the proposed German triplane will do well to remember that he laughs best who laughs last. There is no reason to believe, for example, that the Maybach motors mentioned in the "Mail" are of the

same weight as those used in Zeppelins, or, indeed, that Maybach motors are to be used at all.

Furthermore, the triplane has never been seriously developed since the early days of Mr. A. V. Roe, so no one knows quite what can be done with a triplane built in the light of modern aerodynamic knowledge. As in the case of the airship, there have been about ten steps in the development of triplanes for a hundred in the case of biplanes.

It has been proved that a biplane is a better engineering structure than a monoplane for a given amount of head-resistance, and it may be found that triplanes and machines with still more plane surfaces can beat the biplane.

THE GIRDER QUESTION.

When one comes to consider the building of really big machines the multiplane has obvious advantages. Compression stresses on spars can be divided up among a number of small spars, each carrying effective lifting surfaces, instead of concentrating the whole load into the inner bays of the upper spars of a biplane of enormous span. Thus more surface can be got with far less weight.

It may be that Mr. Horatio Phillips' "Venetian Blind" type of aeroplane will still justify his faith—not, perhaps, because the number of feet of entering edge is the chief thing to be desired, but because there may be a natural limit to the depth of chord of an efficient wing, owing to some natural law pertaining to the elastic limit of air. A limit to the depth of chord seems to imply a limit to span, from pure engineering considerations, apart from the trouble in housing and handling a very big aeroplane. And limit of span and chord places a definite limit on surface, unless surfaces can be superimposed with advantage.

AN EXTINCT OBJECTION.

The old objection to the triplane was that the middle pair of planes could never be made efficient because their upper surface interfered with the air under the top planes, and their lower surface interfered with the air over the bottom plane. In these days such an objection should be extinct, because such interferences can be overcome.

Most of the interference and head-resistance of Mr. Roe's old triplanes came from non-streamlined struts, innumerable wires, and too small a gap between the planes for the shape of his wings.

I take it that the more perfect an aerofoil (or wing section, if you like it put that way) is in form the less air disturbance it causes above and below it. Therefore modern wing-sections should permit of a decreased gap, or, rather, should permit the use of the old gap without interference losses. Properly streamlined struts and a reduced amount of wiring should improve things vastly.

DIAGONAL STAYING.

When one starts to consider really big triplanes one begins to think of machines in which both struts and wiring are abolished and their work is done by accurately streamlined steel tubing placed diagonally. An attempt in this species of staying was made in an Albatros at the Paris Aero Show of 1912, but it was not worked out properly.

Anyhow, in small machines steel tubes have to be so light that they are always in danger of buckling from local stresses, such as a clumsy workman dropping a spanner, or a collision in the air with a bird—which has actually buckled a steel-tube strut in a seaplane, to my knowledge. But when one comes to big machines in which a certain amount of metal is necessary to take big flying loads, that amount of metal may be so disposed as to take local stresses as well,

and then we come to the period of proper engineering construction and something like all-round efficiency.

MADE IN GERMANY AGAIN.

There is, of course, some clear relation between span, chord, and weight carried, even on a multiplane. One cannot decrease loading per square foot by simply piling one plane on top of the other. There must be enough span to give the ailerons leverage for lateral control. Also, no one as yet knows what effect several main planes one over the other will have on fore and aft control and on stability. These things have to be found out, and the sooner they are discovered the better.

It is fairly obvious that we have reached on paper the limit of size and load in biplanes, and the Germans and French seem pretty sure that they have reached

it in practice; so the next step is towards, or back to, multiplanes. Shall we make it ourselves, or must we wait, as usual, till we see the machine—like others which will help to win the war, after we have thought long enough over them and have discarded British suggestions—coming towards us, shrieking "Made in Germany, Gott strafe England"?

Seriously minded aviators and aeroplane constructors will do well to think over this triplane, or multiplane, problem, for it is going to play a very important part in the big fighting aeroplanes of the near future and in the huge passenger-carrying aeroplanes that are to come some day. Meantime, there is still much to be done in the immediate present in improving biplanes and making them more fit for the work now in hand. With some of these points I propose to deal next week.—C. G. G.

CLAIMS ON THE FLYING SERVICES FUND.

The fund raised by the Royal Aero Club for the benefit of those connected with the Flying Services has now reached a sum of close on £10,000, but apparently there have been very few claims upon it. This is doubtless due to the fact that in the nature of things the casualties in the R.N.A.S. and R.F.C. have been chiefly among officers, and that the widows or other dependents of the said officers are already well-to-do, and have no need of financial assistance.

There have, however, been a certain number of casualties among the N.C.O.s and men also, and it is, therefore, somewhat curious that the claims on the fund have been so few. It seems possible that in some cases the dependents of men who have been killed do not know of the Fund's existence, or are ashamed to apply for help, or do not know to whom to apply.

One would, therefore, suggest that if any ratings of the R.N.A.S., or men of the R.F.C. happen to know that anyone dependent on any of their comrades who have gone out is in difficult circumstances and needs assistance, they should send particulars of the case to the Secretary of the Royal Aero Club, 166, Piccadilly, London, W., and, no doubt, the Secretary will take prompt steps to investigate the circumstances.

Even if any such man is not certain whether relief is desired, or does not know details of the case, but merely knows that such and such a man left a widow, or orphans, or a mother or sisters or brothers, who were more or less dependent on him, it will be sufficient to give the name and rank of the dead man, and to say about when he was killed or died, then the Secretary can take the matter up and find out the further details.

The purposes of the Fund are not very clearly defined, and it is quite possible that relief might also be afforded to men injured on service, either at home or abroad, who have been invalided out of the Services and need a little help to tide over a bad time or to assist in starting them in business. The comrades of any such men may be doing them a kindness by bringing their cases before the Royal Aero Club, for the men themselves may be, for the present, out of touch with aviation affairs, and may not realise that there is such a simple method of obtaining much-needed help.

It is further worth while to note that every case will be treated in strict confidence, and that there is no danger of the name of a self-respecting person who has fallen on hard times being paraded before the public as that of a recipient of the Fund's charity. There is no suspicion of charity about it. The Fund is merely a thank-offering gratefully given by those who appreciate the fine work the Flying Services have done, and who realise how much their relatives and friends among the officers depend on the skill, energy, and loyalty of the air-mechanics and the Warrant and N.C.O.s who have to oversee their work.

A DISTINCTION WITH A DIFFERENCE.

A correspondent writes expressing his surprise at certain comments which appeared in this paper recently concerning the announcement that there are vacancies in the Aeronautical Inspection Department.

The correspondent says: "Having in mind your recent bitter attacks upon the waste and inefficiency of the powers that be at the Royal Aircraft Factory, I cannot now reconcile the statement that the Aeronautical Inspection Department is a most necessary establishment, and one of the most efficiently organised and managed, and the last paragraph refers to intelligent and able senior officials.

"You may say that the two branches are different, but one is the product of the other; therefore, if the A.I.D. is the essence of perfection, then the military factory cannot very well be otherwise. It seems ludicrous."

This gentleman seems to be labouring under a somewhat common delusion—namely, that the A.I.D. and the R.A.F. are merely two branches of the same establishment.

The A.I.D. is actually and definitely a branch of the R.F.C., and a highly efficient branch at that. It is absolutely under military control, and it has the good fortune to be staffed practically throughout by men who know their jobs thoroughly, and who do their very best to promote a spirit of amity between their particular department and those with whom they come in contact.

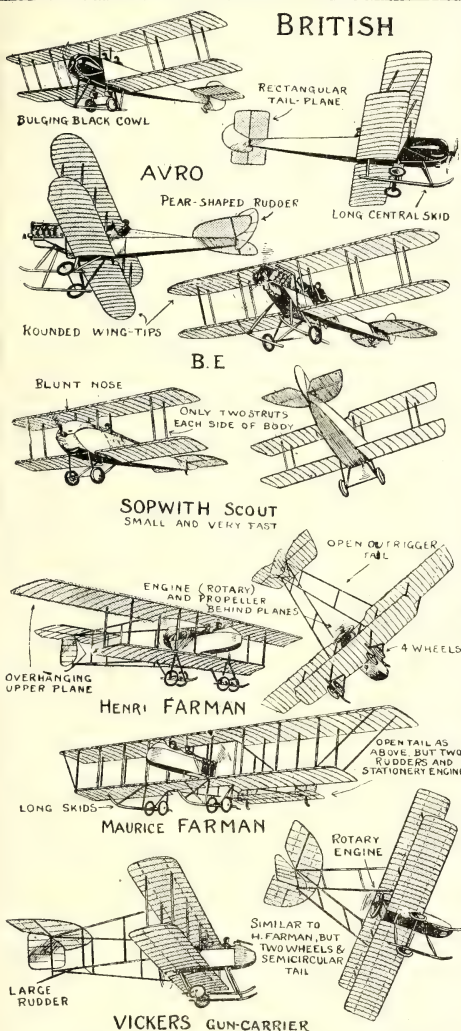
The R.A.F., on the other hand, is ostensibly a Government experimental department, and in so far as the employees are under any kind of control, that control is civilian. A comparison of the number of hands employed with the total output of the factory shows that, as a manufacturing concern, it is utterly inefficient, and the fact that in the whole of its existence it has only produced two aeroplanes of outstanding quality proves that it is equally inefficient as an experimental department, especially when one considers that neither of the men responsible for these machines is now in the employ of the R.A.F.

At one time, prior to the foundation of the A.I.D., the R.A.F. was permitted to pronounce judgment on the productions of independent constructors with whom it was, and still is, in direct rivalry. The tone adopted by its employees at that period to the heads of various aeroplane firms was openly offensive, and the policy of the concern was clearly directed towards putting independent constructors out of business.

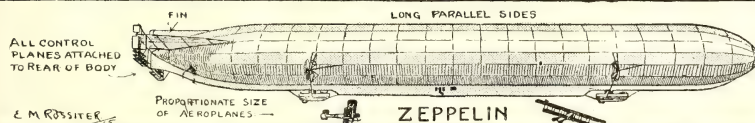
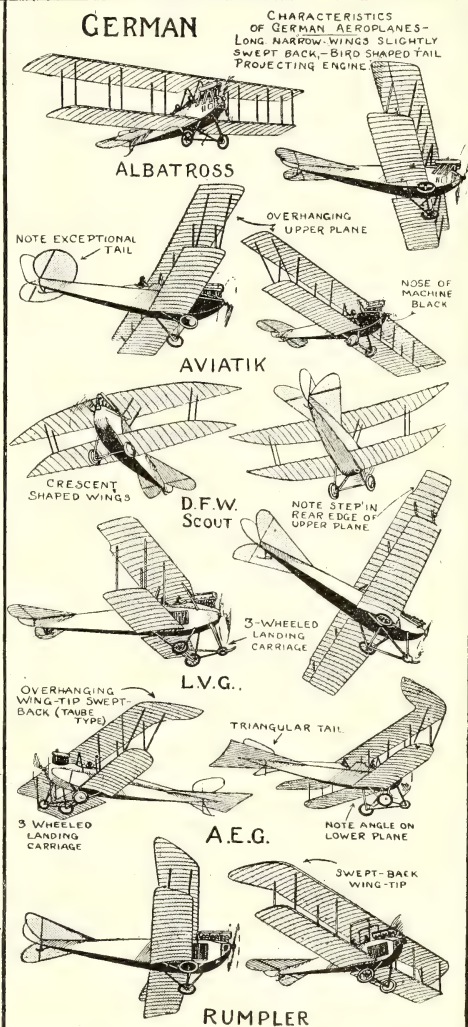
When the A.I.D. was instituted many of the better class and more experienced men among the upper grades of the employees at the R.A.F. went over to the A.I.D., and to this extent there is some slight link between the two establishments. One may, however, rather regard these men as brands plucked from the burning than as conveyors of infection from one establishment to the other, and the distinction between the two establishments cannot be too clearly understood.

THE RIVAL AIRCRAFT.

BRITISH



GERMAN



TWO SUSPENDED GONDOLAS AND ONE CENTRAL CABIN PROPELLERS (A) ONE ON EACH SIDE OF THE GONDOLAS

The sketches above give a fairly accurate idea of the distinctive points of some of the leading types of British and German aeroplanes. The picture originally appeared in "The War Illustrated," to which the editor expresses his acknowledgments for its courtesy in permitting reproduction.—It is hoped that they may be of use to officers not of the R.F.C. on active service.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," August 3rd, 1915.

WAR OFFICE, AUGUST 3RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—July 16th: Sec. Lieut. C. C. Miles, S.R., Sec. Lieut. H. T. Kemp, Cheshire, and to be seconded, Sec. Lieut. H. V. Champion de Crespigny, S.R., Sec. Lieut. G. S. M. Insall, S.R.

INSPECTION STAFF.—Temp. Assist. to the Chief Inspector—Sec. Lieut. F. J. Allen, R.A., and to be seconded. July 6th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—J. H. Herring to be sec. lieut. (on prob.). June 7th.

Sec. lieuts. (on prob.) confirmed in rank: G. S. M. Insall, H. V. Champion de Crespigny, C. C. Miles.

To be sec. lieuts. (on prob.): H. W. Butterworth. July 10th. H. G. Salmond. July 13th. July 14th: M. Le Blanc-Smith, G. de Lacy Wooldridge. E. A. Kelly. July 17th.

* * *

From the "London Gazette," August 4th, 1915.

WAR OFFICE, AUGUST 4TH.

REGULAR FORCES.—N.C.O.'s to be sec. lieuts. for service in the Field:—

INFANTRY.—E. SURREY.—Sgt. R. Collis, from Royal Flying Corps, and seconded for duty with that unit. June 20th. HANTS.—Sgt. W. V. Strugnell, from Royal Flying Corps, and seconded for duty with that unit. June 27th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—July 16th: Lieut. R. T. Vachell, Northd. F., and to be seconded; Sec. Lieut. W. J. McConnochie, S.R.; Temp. Lieut. H. A. Van Ryneveld, 7th L.N. Lances., and to be transferred to gen. list. Sec. Lieut. J. L. Williams, S.R. July 20th.

ROYAL REGIMENT OF ARTILLERY.—R.G.A.—Sec. lieuts. to be lieuts.—June 9th: M. R. Chidson, and to remain seconded; M. T. Sandys, and to remain seconded.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. S. Ward confirmed in rank.

* * *

From the "London Gazette," August 5th, 1915.

WAR OFFICE, AUGUST 5TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS:—

CENTRAL FLYING SCHOOL.—Instructor—Capt. G. B. Stopford, R.A., a Flight Comm., vice Lieut. (temp. Capt.) A. H. L. Soames, 3rd Hussars, deceased. July 22nd.

MILITARY WING.—Deputy Assist. Director of Military Aeronautics.—Capt. (temp. Maj.) P. W. L. Broke-Smith, R.E., and to retain temp. rank whilst so employed. March 20th.

Flight Comm.—Capt. (temp. Major) H. L. Reilly, 82nd Punjabis, I.A., and to retain temp. rank whilst so employed. April 9th.

Equipment Officer.—Sec. Lieut. W. R. Wills, Indian Army, R. of O., and to be temp. capt. whilst so employed. March 26th.

Flying Officers.—May 1st: Capt. H. Petre, Australian Permanent Forces; Lieut. W. W. A. Burn, N.Z. Staff Corps. May 11th: Capt. T. W. White, Australian Citizen Forces; Lieut. W. H. Treloar, Australian Citizen Forces. Lieut. G. F. Merz, Australian Flying Corps. June 5th. Lieut. T. R. Wells, 33rd Punjabis, I.A. June 7th. Sec. Lieut. E. J. Fulton, 1st Skinner's Horse, I.A. June

26th. Lieut. A. H. Morton, R.A., and to be seconded. July 20th. July 22nd: Sec. Lieut. H. H. Kitchener, R.E.; Sec. Lieut. D. A. L. Davidson, S.R.; Sec. Lieut. H. S. Ward, S.R.

ROYAL FLYING CORPS (MILITARY WING).

The notification of appt. of H. A. Johnston to a Sec. Ltcy., which appeared in "Gazette" of June 21st, is cancelled.

* * *

From the "London Gazette," August 6th, 1915.

WAR OFFICE, AUGUST 6TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer—Sec. Lieut. (now Lieut.) B. C. Hucks, S.R. August 12th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): C. H. Friese-Greene. July 1st. J. C. Slessor. July 6th. E. L. Millar. July 15th. N. G. McNaughton. July 21st.

* * *

From the "London Gazette," August 7th, 1915.

WAR OFFICE, AUGUST 7TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—R. Yates to be sec. lieut. (on prob.). July 21st.

* * *

From the "London Gazette," August 9th, 1915.

WAR OFFICE, AUGUST 9TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. A. Oxenham confirmed in rank.

NAVAL.

The following appointments were notified at the Admiralty on August 3rd:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: H. S. Whitaker and A. Partridge, August 2nd.

Mr. D. N. Gillmore granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date August 2nd.

The following have been granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., armoured cars, all to date August 2: S. T. Baker, H. A. Furniss, F. H. Tommas, L. G. Wright, and the Hon. E. S. Erskine.

Temp. Sub-Lieuts., R.N.V.R., F. W. Hodges promoted temp. lieut., R.N.V.R., with seniority June 1st.

Leading Mechanic M. J. M. Bryan promoted proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 1st.

The following have been entered as proby. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 7th: W. S. Stewart, C. W. Greig, A. F. Marlowe, and A. A. Wallis; and also W. C. Corry, to date July 31st.

* * *

The following appointments were notified at the Admiralty on August 4th:—

ROYAL NAVAL AIR SERVICE.—Mr. H. G. Harris granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date August 3rd.

* * *

The following appointments were notified at the Admiralty on August 5th:—

ROYAL NAVAL AIR SERVICE.—Petty Officer, Mechanic K. C. Buss, promoted to the rank of proby. flight Sub-Lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date July 15th.

The following appointments were notified at the Admiralty on August 6th:—

ROYAL NAVAL AIR SERVICE.—Mr. A. J. O'Reilly granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," for R.N.A.S., to date July 29th.

E. G. Hopercraft granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date August 5th.

The undermentioned have been entered as probationary flight sub-lieuts. for temp. service, and appointed to the "President," for R.N.A.S., to date as stated: F. H. Smith, July 12th; C. J. Hallinan, August 7th; and Temp. Sub-Lieut., R.N.V.R., C. G. Knight, August 5th.

* * *

The following appointments were notified at the Admiralty on August 7th, 1915:—

ROYAL NAVAL AIR SERVICE.—Mr. A. R. Layard granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date August 6th.

Mr. A. S. Goodwin entered as acting flight lieutenant, for temporary service, and appointed to the "President," additional, for R.N.A.S., to date August 5th.

* * *

The following appointments were notified at the Admiralty on August 9th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned granted temp. commns. as Lieuts., R.N.V.R., and appointed to the "President," for duty with R.N.A.S., to date as stated: J. D. Carmichael, August 7th; J. R. Potter, August 3rd; E. C. Hatcher, R. V. C. Brock, and H. N. Warburton, August 7th.

The following have been granted temp. commns. as Sub-Lieuts., R.N.V.R., and appointed to the "President," for R.N.A.S.: H. E. Weaver and E. Wright, to date August 7th.

The undermentioned have been entered as proby. Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: L. G. Scott, I. N. C. Clarke, H. V. Worrall, H. L. Francis, C. J. A. Mullens, R. J. Slade, J. H. D. M. Campbell, A. B. Watkins, F. D. H. Bremner, G. V. Leather, and H. L. Wood, August 14th; A. S. Ince, G. A. Gooderham, and D. A. Hay, July 13th; B. C. H. Cross and J. C. Beddard, August 7th; also Temp. Sub-Lieuts. R.N.V.R., W. G. Pigott, M. G. Gill, and G. B. W. Yerburch, August 7th. Temp. commissions and appointments as Sub-Lieuts., R.N.V.R., of above-mentioned officers terminated.

ROYAL NAVAL VOLUNTEER RESERVE.—Temp. Sub-Lieuts. —N. Sladden, to the "President," additional, for R.N.A.S., and B. B. Joynson, to the "President," additional, for R.N.A.S. (armoured car aeroplane support), to date August 7th.

* * *

The Secretary of the Admiralty announced the following casualty on August 5th under date August 3rd:—

MISSING.

Flight Lieut. Kenneth F. Watson, R.N.

[See the German communiqué of August 6th.—Ed.]

* * *

A certain number of unskilled men are being taken on by the Royal Naval Air Service for working parties. Applicants must be of good physique. The pay is 2s. a day with all found. The recruiting office is at Brook Green Road, Hammersmith. Men engaged on Government work need not apply.

The Secretary of the Admiralty made the following announcement on August 10th:—

A squadron of hostile airships visited the East Coast last night and this morning between 8.30 p.m. and 12.30 a.m.

Some fires were caused by the dropping of incendiary bombs, but these were quickly extinguished, and only immaterial damage was done.

The following casualties have been reported: One man, 8 women, 4 children killed; 4 men, 6 women, and 2 children wounded.

One Zeppelin was seriously damaged by gun-fire from land defence and was reported this morning being towed into Ostend.

She has since been subjected to continual attack by aircraft from Dunkirk, and under heavy fire, and it is now reported that after having had her back broken and rear compartment damaged she was completely destroyed by explosion.

It is regretted that Flight Lieut. R. Lord, who was one of the pilots sent up to engage the enemy, was killed on landing in the dark.

[Flight Lieut. Lord belonged to Newcastle, where he was well known in sporting circles, and in the motor trade. He was also one of the founders of the Northern Aircraft Co. A rich young man who spent his money on sports of real use, his loss is to be greatly regretted.—Ed.]

* * *

The following appeared on August 4th:—

SIMPSON—FENWICK.—On the 31st July, at the Parish Church, Summertown, Oxford, by the Rev. A. M. Littlehales, M.A., Vicar-designate of Great Missenden, Buckinghamshire, Alistair Simpson, Royal Naval Air Service, to Margaret Tremayne, only daughter of Rev. George B. Fenwick and Mrs. Fenwick, of 141, Banbury Road, Oxford.

* * *

Mr. H. F. Prevost Battersby, the special correspondent of the "Morning Post" with British Headquarters in France, gives the following vivid description of a kite balloon as a target. As the kite balloons belong—for the time being—to the Navy, the story comes under this heading:—

"Little happens that is new along the line of battle, but one feature has distinguished it during the last few weeks—it has been outlined, more or less roughly, by observation balloons.

"This is not the spherical captive balloon to which military operations in the past have accustomed us, but is shaped like an old-fashioned pistol with the handle hanging down and the muzzle nosing every change of wind.

"These guardians of the air look rather impressive when one can see enough of them to follow the line of front over which they float, while, grimly watching them, showing faintly through the grey air, are their unlovely counterparts over the German lines.

"It is significant of the future, this lifting, as it were, of the frontiers into the air, where the battles which are to come shall be so ruthlessly decided; and one looks at these queer hulks, anchored in the airway, with the sense of seeing something which, though so new, has been superseded already, by man's mental processes, if not by his invention; and yet, seeing something that points the way to a fresh tension which is being devised for the undoing of humanity, a fresh apprehension which is going to be imposed upon it, which will make the horrors of the present war seem insignificant by comparison.

[Note that Mr. Battersby also thinks of "the next war" and does not regard this as the Armageddon.—Ed.]

"It happened the other day that the enemy began shelling one of these ponderous creatures. One has grown used to seeing aeroplanes chased about the sky by anti-

aircraft guns, and the airman has always looked to have a fair sporting chance, though sometimes he might conceivably not be so regarding it; but to shoot at this helpless 'sitter' appeared to have about it no element of sport whatever. Though the range was, of course, considerable for the weapons used, which appeared to be ordinary field guns firing shrapnel, one felt from the first burst of smoke, five hundred feet beneath it, that the gun was certain to account for so tame a prey. It looked for all the world like some helpless kid tied out to draw a tiger.

"The world beneath the balloon quickly became excited by the bombardment. It came out of its houses and stared up into the air; foolishly enough, since, though the shrapnel bullets might fail to reach the observer, they were quite certain to return to the ground; and the road along which we were travelling, on which these people stood, was directly in the line of the enemy's fire; indeed, a fragment of shell from one of the discharges ripped up the back of a horse browsing by the roadside.

"But this 'sitter' was not the soft thing it looked. Shell bursts would creep nearer and nearer, till it seemed a certainty that the next must split that frail envelope asunder. But the next would be wide by a hundred yards, perhaps, or hopelessly at fault in elevation.

"Though he (the enemy) failed to score a hit, his bullets were evidently getting nearer than the observer liked, for presently the drum of the winder began to revolve, and the ungainly creature drew slowly nearer to the earth. As it descended the enemy's shooting became more wild, but it was sufficiently varied to send everyone who had been looking on at the match scuttling for a place of safety."

[A very good piece of descriptive work, and of particular interest to readers of this paper who had all the arguments in favour of kite-balloons explained to them some months before the authorities saw fit to permit their use and when certain R.F.C. officers were actively opposed to them.—Ed.]

* * *

The following extract from the "Glasgow Herald" is not only one of the finest pieces of descriptive writing the war has produced, but it is of particular technical interest as showing the genuine utility of the kite-balloon, first advocated in this paper, and previously damned as useless by those who then posed as experts at the War Office, and who succeeded in delaying the adoption of these useful auxiliaries by many months:—

G.H.Q., Med. Exped. Force, June, 1915.

You may like to hear of our new Helen and the new Troy—only her name is Elizabeth.

We had been lying among the sun-baked boulders watching the chap who has the best job of all, the man in the yellow balloon. Out at sea, high up, his enormous gas-bag seemed never to sway an inch. It just hung there in the Aegean blue, with a man caged and captive, yet how gloriously free, all-seeing, and all-knowing. If we did well in the pre-breakfast attack, he knew it, and we knew it. If the French made ground on our flank, he knew it too, and we assumed it. Omniscient Being, at whose slightest wireless word warships disposed themselves and howitzers barked furiously.

"Look," said my companion, pointing with the stem of his pipe, "the 'Lizzie' moves. She goes to cruise up the west coast; something on."

Such is the limit of our blind understanding. Myself, I keep an eye on the yellow balloon, and freakishly think of the verse in the "Rubaiyat":—

"The Ball no Question makes of Ayes and Noes,
But Right or Left as strikes the Player goes;
And He that toss'd thee down into the Field,
He knows about it all—He knows—He knows."

We see a vicious flame shoot out of the Elizabeth's side, and a small cloud of rank yellow smoke ascend.

Seconds pass, and then we hear the mighty roar of the rep. art. Eagerly we watch the ridge which forms a sort of sacrum to the backbone of the Peninsula hills, but no bursting shrapnel rewards our eyes. And yet somewhere, just over that skyline, there is now death and awful devastation, and death most horrible, because death from nowhere—apparently.

It was a transport, packed with Turkish troops, sailing the placid Sea of Marmora. She was making good speed, no doubt, for her master knew our submarines might get him. You can picture the scene. The soldiers were likely ruminating over their departure; maybe the cheers of their people at the docks still haunted their ears, though from all accounts it is extravagant to think so. On the bridge, an anxious skipper, alive to his danger—any danger, so long as he could see it. And then, with a whistling scream, comes this staggering death-blow out of the blue, stunning, tearing, shattering everything. There must have been a terrible swallowing up for a minute, and then the sea, I suppose, became calm again. . . .

It was the man in the yellow balloon who had seen the transport first, and his was a ticklish task, for he had to judge the distance of the fatal shot. A prodigy of accuracy to have gauged it so! Yet I vow he signalled but the barest facts to the Elizabeth—"transport hit and sunk," or something telegraphically brief, like that. And then somebody on the warship went hot all over, and called for a cocktail.

Helen with the high hand no longer stands a chance in these parts. She is ousted for all time by the long arm of Elizabeth.—R. A. G.

["R. A. G.," whoever he may be, is to be congratulated on his workmanship. Probably he holds a very subordinate position in one of the Services, in which his duty could be done by a man worth a pound a week or so. It is typical of this country that such a man should be wasted while the charlatans who pass for war correspondents draw big salaries and enormous expenses. It only shows that the British Press, as a rule, is as inefficiently managed as any Government Department. But there is an old proverb which says that a country has the newspapers it deserves.—Ed.]

* * *

Sir Ian Hamilton's despatch from the Dardanelles published on August 6th mentions the following officers under the Air Department:—

ARMoured CAR SECTION.

Lieutenant-Commander J. C. Wedgewood, Royal Naval Volunteer Reserve; Lieutenant T. D. Hallam.

[No mention is made of any Naval aviators, but possibly these, though operating from land stations, would only be mentioned by the Naval Officer Commanding.—Ed.]

* * *

The following appeared in the "Pall Mall" on August 6th:—

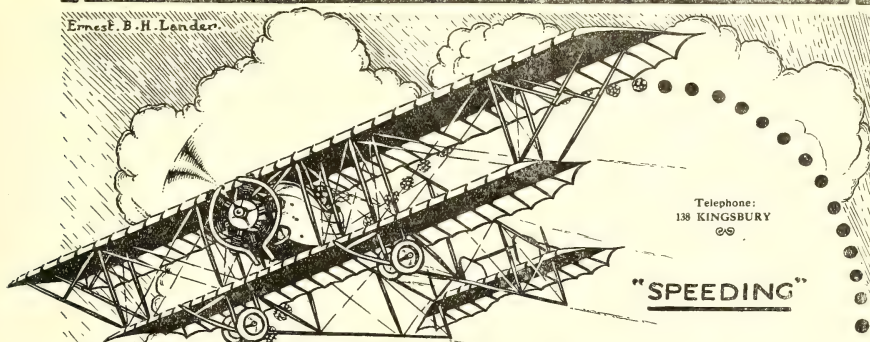
"Commander O. Locker-Lampson, of the Royal Naval Air Service, writes that a committee has been formed to supply men in the armoured car squadrons with comforts, and chocolate, Balaclava helmets, cigarettes, and especially gramophone records are very acceptable, and should be sent to the hon. secretary, Lady Erskine, at 48, Dover Street, W."

Nothing surprises one in this curious war, and King's Regulations seem a trifle frayed at the edges, but one would like to ask Commander O. Locker-Lampson, R.N.V.R., in the words of the Scriptures, "By what authority doest thou these things, and who gave thee this authority?"

* * *

It is announced by the daily press as a matter of international interest that Mrs. Corkery, of Exmouth,

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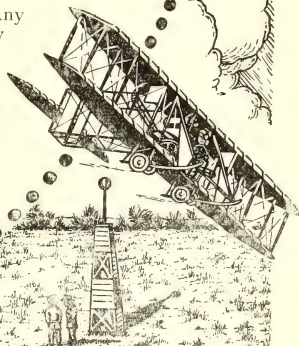
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

the mother of the late Flight Sub-Lieutenant Warneford, R.N., V.C., has been presented with a replica of the emblem of the French Legion of Honour in jewels, subscribed for in the workshops of the Morane, the Gnome, and the Rhone companies.

The subscription was opened before Mr. Warneford lost his life, but the subscribers desired that the gift should be handed to Mrs. Corkery "as souvenir of the symbol uniting the French and British nations in one object."

Intimate personal belongings of the late officer were recently exhibited at a bazaar at Exmouth, doubtless with excellent patriotic motives, but as they included garments in which he was killed, one is doubtful about the good done by encouraging morbid tastes of visitors.

* * *

MILITARY.

The following casualty in the Expeditionary Force was reported on August 3rd under date July 28th:—

MISSING.

Weir, Lieut. A. G., Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on August 5th under date July 30th:—

WOUNDED.

Whidborne, Sec. Lieut. C. S. L., 14th Hussars, attached Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force published on August 8th are reported under date August 1st:—

KILLED.

Lascelles, Sec. Lieut. J. F., 2nd Rifle Brigade and Royal Flying Corps.

WOUNDED.

Johnstone, Sec. Lieut. D. K., Royal Flying Corps.

Liddell, Capt. J. A., 3rd Argyll and Sutherland Highlanders and Royal Flying Corps.

Selby, Lieut. J. G., R.F.C. (attd. Royal Flying Corps).

MISSING.

Broder, Lieut. P. A., 5th Worcestershire Regiment and Royal Flying Corps.

Macpherson, Sec. Lieut. R. C., the Black Watch and Royal Flying Corps.

* * *

Reported under date August 2nd:—

DIED OF WOUNDS.

Vachell, Lieut. R. T., 1st Northumberland Fusiliers and Royal Flying Corps.

MISSING.

Reid, Sec. Lieut. W., 6th King's (Liverpool Regt.) (T.F.) and Royal Flying Corps.

Officially reported Missing and unofficially reported interned in Holland.

Hunt, Capt. R. E. B., Shropshire Light Infantry, attached Royal Flying Corps.

Jackson, Lieut. F. H., Royal Sussex Regiment, attached Royal Flying Corps.

* * *

The following casualty published on August 9th among the Indian Forces was reported from the Expeditionary Force, date not stated:—

OFFICER MISSING.

Hankin, Lieut. H. M., Queen Victoria's Own Corps of Guides, attached Royal Flying Corps.

* * *

The list, published on August 5th, of N.C.O.'s and men to whom the Distinguished Conduct Medal has been awarded includes the following:—

Corporal J. N. Rogers, 1031, Royal Flying Corps, acting as a gunner with an officer pilot near Lille. At a height of 10,000 feet a German aeroplane, armed with

a machine-gun, was attacked; the hostile pilot was hit, and his aeroplane dived, but was followed and the fight continued until at an altitude of about 1,500 feet, it turned on its back and fell to the ground.

2nd Class Air Mechanic H. W. Sutcliffe, 2726, R.F.C. For great gallantry and zeal while employed as a gunner with an officer pilot. On May 9th, over Wytchaete, they engaged a German aeroplane at a height of about 4,000 feet. After a sharp fight the hostile machine turned on its side and finally fell to the ground nose first, and was wrecked.

* * *

The following appeared in the obituary columns on August 9th:—

VACHELL.—On the 1st inst., died of wounds in France, Captain Richard Tanfield Vachell, 5th Fusiliers and Royal Flying Corps, only son of Horace Annesley Vachell, of Beechwood House, Bartley, Southampton.

Captain Vachell was the only son of the novelist and dramatist, Mr. Horace Vachell. He was educated at Harrow and Sandhurst. He was a member of the School football eleven, and also of the fifteen, playing twice against Eton.

He was aide-de-camp to Lord Sydenham in India. He was with his regiment, to which he was appointed on November 27th, 1913, during the retreat from Mons, was mentioned in despatches, and was wounded last October.

Recently he joined the Royal Flying Corps, and flew from Farnborough to France only a few days ago. He took his certificate (No. 1,251) on a Maurice Farman at Le Crotoy as recently as April 28th of this year.

* * *

Second Lieutenant John Frederick Lascelles, Rifle Brigade, 2nd Battalion, and Royal Flying Corps, was the youngest son of the late Lieut.-Colonel H. A. Lascelles, 2nd Battalion Rifle Brigade, and grandson of the late Right Hon. W. S. S. Lascelles, M.P., and Lady Caroline Lascelles, daughter of the sixth Earl of Carlisle. For his work as observer attached R.F.C. he was mentioned in despatches on June 23rd, and was awarded the Military Cross on the day following. He was only 20 years of age.

* * *

The obituary notes in the "Times" stated on August 6th that Sec. Lieut. John Parker, Royal Lancaster Regt., has died of wounds received in an aerial encounter. He was aged 25 years, and the only son of John Parker, B.S.M., 20th Battalion Royal Fusiliers. He graduated at the University of Alberta. He does not appear as an R.F.C. casualty up to the time of writing.

An R.F.C. officer, writing to his parents, said: "The only information I have been able to gather of the death of your son, who was killed in a fight in the air, was dropped by a German machine, who said that your son had been wounded and died in hospital."

"The German message also said that they wished to express their admiration for the extreme gallantry of the English aviator. I think no one would wish for a better tribute to gallantry than this."

"I enclose the original letter dropped by the German aviators in its envelope. We have dropped them a message thanking them for their thoughtfulness in giving us the information, with the hope that in the near future we shall frequently be able to do the same for them."

[The double meaning of the last sentence by no means detracts from the chivalrous feeling which exists between the aviators of the two armies, and is one of the best features of this ferocious war.—Ed.]

* * *

The following story of the R.F.C. told by Mr. H. J. Prevost-Battersby, of the "Morning Post," tells of one of the bravest deeds of the war, and it bears a curious

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resemblance to M. Verrier's gallant action in October last:—

"The airman was engaged in one of those reconnaissances over the enemy's country which have become a mere commonplace routine of duty and was a long way within the enemy's lines when an unlucky burst of shrapnel smashed his right leg to pieces. The shock of the injury, which was very severe, caused him to faint, and the machine, getting out of control, nose-dived towards the earth.

"So steep was the descent that the machine-gun discs toppled out of the aeroplane, and the observer would have followed them had he not clung on to the stays, in that position not being able, of course, to render the slightest assistance to his unfortunate companion or to get control of the machine.

"It looked as like certain death for both of them as such things can look in the air, when the rapid passage through it revived the pilot. Had he not returned in an instant to the coolest possession of his senses he would almost certainly have wrecked the machine, for at the fearful pace at which it was falling any but the gentlest pressure on the elevator would have been fatal. So exactly, however, did the pilot realise his perilous position in that instant of returning consciousness that he succeeded in checking gradually the headlong fall of the machine till he had regained complete control of it.

"He was then still in the enemy's country, and suffering agonies from his shattered leg, the bone of which was splintered; and, with the very likely prospect of losing consciousness again, he might have been forgiven had he sought a landing. But such a surrender of the spirit never occurred to him. He shouted an inquiry as to the nearest landing place within our lines, and the observer pointed it out on the map to him. It was thirty-five miles away, more than half an hour's travel in the face of the sou'-wester, and he was losing blood fast.

"Yet never for an instant did his resolution falter. He would take no risks either, and though, of course, it considerably prolonged the journey, he rose to a safe height to cross the German lines, and made a perfect landing in spite of his damaged chassis, and waited to faint again till they lifted him out of his seat."

[Another fine story of an officer who deserves official recognition more than many who acquire D.S.O.'s and so forth, through being merely useful to unclever senior officers. But above all it is another argument in favour of dual controls, which can be so easily fitted, but are not, simply owing to official inertia.

One gathers that the pilot of the machine was Capt. J. A. Liddell, Argyll and Sutherland Highlanders, who had already been severely wounded while with his regiment in France, and joined the R.F.C. thereafter. He took his certificate No. 781 at the Vickers School at Brooklands on May 14th, 1914.—Ed.]

Speaking at the Guildhall on August 4th, Sir Robert Borden said:—

"I have no military knowledge nor experience—I am going to say a word with regard to military affairs in a moment—but before doing that I would like to express my own appreciation, and I think of all the people in the Dominion which I have the honour to represent, of the splendid work which has been done by the Royal Flying Corps in this war. (Cheers.) Knowing the great efforts that have been made by other nations in this particular branch of the military and naval services, we were rather inclined to anticipate and expect that it might not be up to the highest standard of the great nations of the world. I have good reason to know, because I have had some intimate accounts of what has transpired at the front—I have good reason to know that the work of our aeroplane service has been equal to the best—(cheers)—and that in

initiative, courage, resourcefulness, and fortitude our men have held their place with the best ever since the outbreak of this war."

* * *

"It is surprising," says the "Nation," "that so little has been heard of the wonderful deed of Lieut. Moorhouse, the young aviator who died of his wounds after dropping bombs on Courtrai station and railway lines. The enterprise was of vital importance, 40,000 Germans were in full march on our columns. They were stopped dead by Mr. Moorhouse's achievement. But that was not all. It was equally necessary for our commanders to know whether the column had been arrested or no. Lieutenant Moorhouse had flown low and been badly wounded. But he was resolved to return to our lines and make his report, and return he did, fiercely fired on from the German ranks. He was warmly thanked for an inestimable service, but he did not long live to enjoy his fame. Before dying he wrote a touching letter to his young child, to be read when he was seventeen."

* * *

Writing to his aunt, Mrs. Stevens, 20, Watkin Terrace, Private C. Thorne, of the Leicester Territorials, describes the destruction of a Taube. "On the 25th," he says, "we saw a Taube being chased by an English or French aeroplane. Three or four shots were fired, and all at once the Taube burst into flames and overturned. It was at a tremendous height, and one of the occupants jumped out and came crashing through space. It is rumoured he was not killed. The driver must have kept a wonderful nerve, for although all in flames and upside down, he planed right down, and was found in his machine burnt to death, an appalling sight, of which you see many in war."

[The rumour mentioned is, of course, incorrect, but the number of machines set on fire in the air lately leads one to suggest that it is worth while to consider quite seriously the use of parachutes as a means of escape from burning aeroplanes. The Royal Flying Corps would do well to investigate the subject with care.—Ed.]

* * *

A marriage is to take place between Lieut. W. H. Stuart Garnett, attached R.F.C., late Lieutenant-Commander, R.N.R., of Hampstead, and Sybil Maud, only daughter of Spencer R. Bradley, of Daracq Lodge, Streety, at Hampstead Parish Church, on Saturday, August 14th, at 12.30.

* * *

An interesting account of a British aviator's destruction of a Taube is given in a letter sent home by a Fleet Street journalist who is with his regiment in the Ypres district.

"We were lucky enough to see an aeroplane brought down last Sunday (July 25th)," he writes. "It is a rare sight—our fellows had not seen it before in nine months' continuous trench work. It was done by one of our little fast fighting aeroplanes.

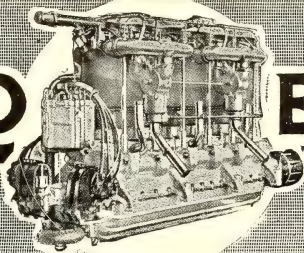
"The Taube had been enjoying his Sunday evening flying up and down our lines, and we were idly gazing at our pompos popping away at it without getting very near.

"Then suddenly our man flew up out of nowhere, travelling at a tremendous speed, and catching the other up hand over fist. When over his victim he started his machine gun. It had only been rattling a few seconds when there was a burst of flame and a loud report as the petrol tank exploded.

"The machine toppled over, and a small black object—possibly the aviator, poor devil!—fell headlong to earth. At the sight our trenches for miles around gave out a mighty cheer, which was renewed when the machine was seen to have fallen behind our lines. And the Germans eased their feelings by giving us rapid fire for a few minutes!"

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FRANCE.

The following official French communication corrects the German communiqués of the 2nd to 7th:—

AVIATION.—No French aeroplane has been shot down by the German artillery.

* * *

An official Note issued in Paris on August 5th says:—

One of our aeroplanes was forced, in consequence of motor trouble, to land near Moulin-sous-Touvent in our lines at a short distance from the enemy's lines. The machine no sooner landed than it caught fire. The aviators are safe.

* * *

The following communiqué was issued by the Ministry of Marine on August 5th:—

On August 3rd and 4th a French battleship and two cruisers, accompanied by torpedo-boat destroyers, minesweepers, and an aeroplane ship, made a demonstration before Sighadjik and Scala-Nova, on the Anatolian coast (40 miles south of Smyrna).

On August 3rd they bombarded Sighadjik, where they destroyed the Customs Office and part of the fortifications.

On August 4th the battleship and one of the cruisers bombarded the fortifications in the Turkish quarter of Scala-Nova and a fortified point west of the town. The other cruiser destroyed the village of Spelia, used by enemy submarines as a revictualling base.

* * *

The communiqué of August 6th says:—

In Lorraine the Germans last night bombarded the village of Embermenil and our positions around Reillon. Two German aeroplanes threw about ten bombs on Fraize, in the valley of the Meurthe, which killed two women and a soldier.

* * *

The following statement respecting the operations at the Dardanelles was issued in Paris on August 6th:—

There have been no striking facts to report at the Dardanelles since the beginning of August. There have been intermittent artillery duels and great activity among the aircraft.

According to Reuter an official statement issued in Paris on August 7th says:—"The Germans have been trying to destroy two Allied hydroplanes off Nieuport by means of big calibre shells. Our artillery has rapidly reduced the hostile batteries to silence. One of the hydroplanes returned by its own machinery. The other was towed to shore undamaged."

[The assumption is that hydro-aeroplanes, otherwise seaplanes, are meant. The note seems to show that the machines were hunting in couples, as recommended in this column last week.—Ed.]

* * *

The communiqué of August 9th says:—

This morning a squadron of thirty-two bombardment aeroplanes, escorted by aeroplanes for pursuit purposes, left to bombard the station and the factory at Sarrebruck. The atmospheric conditions were unfavourable, the valleys being shrouded in mist and the sky cloudy.

Nevertheless, notwithstanding the difficulties of finding the direction, twenty-eight aeroplanes reached the goal and dropped on their objectives 164 shells of all calibres.

The escorting aeroplanes kept off the Aviatiks which attempted to bar the way to the squadron. Numerous columns of smoke and fires were observed above the points aimed at.

* * *

Georges Carpentier, the famous boxer, who joined the French Army as a motor driver, has at last passed for his aviator's certificate. He is said to be a good and careful pilot, possessing good judgment, and using it, despite his youth.

* * *

It is with regret that one notes the death on flying service of the Adjudant-aviateur Sismanoglou, a volunteer in the French Aviation Service, whose photograph appeared recently in this paper on the occasion of his being decorated with the Médaille Militaire at the same time as the Adjudant Noël. M. Sismanoglou was currently supposed to be a Greek, but the French list of pilots gives him as a Turk, born at Samsoun, in Asia Minor.



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Early on August 9th at Villacoublay a Breguet bi-plane, while making a trial flight, landed in a grain field. The machine collided with a haystack and was overturned. The pilot Lecqueville and the passenger Soulat were crushed and suffered severe injuries. They were taken to the Versailles Hospital, but both died on the way.

GERMANY.

The communiqué of August 3rd says:—

A French captive balloon, which was torn from its anchorage during a thunderstorm, was caught by us north-west of Etain.

* * *

The communiqué of August 6th says:—

The fight on the Lingekopf and towards the south continues. Our anti-aircraft guns compelled four enemy aeroplanes to descend. One was burned and another shot to pieces. On the coast a French seaplane with its occupants fell into our hands.

[The last sentence may refer to Flight Sub-Lieut. Watson, notified as missing.—Ed.]

Our airship squadron threw bombs on the railway buildings of Bielostok (about 90 miles N.E. of Warsaw, on the Petrograd Railway).

* * *

The communiqué of August 7th says:—

The situation at Warsaw is unchanged. The Russians continue the bombardment of the town from the eastern bank of the Vistula. Our airships dropped bombs on the railway stations of Nowo Minsk and Siedlice.

* * *

The communiqué of August 9th says:—

Yesterday near Dammkirch, early this morning at Schwarzensee, near Ypres, at Gondrescange, and near Harboney our battle aeroplanes brought down one French machine at each place.

Two aeroplanes belonged to the squadron which bombarded the open town of Saarbrücken and the surrounding district, operations without causing any military damage, killing nine peaceful citizens and seriously wounding 26, and slightly wounding a great number.

* * *

It is reported from Amsterdam that in connection with the extension of the Zeppelin factory at Friedrichshafen, a new general manager, Herr Colsmann, has been appointed.

* * *

It was stated in Paris on Tuesday, August 3rd, that a squadron of Allied aeroplanes had flown over Strasburg, dropping twenty-five bombs. The damage is unknown.

* * *

Writing in the "Chronicle," a correspondent in Northern France says of the Germans:—

"So great was their fear of our naval airmen's expeditions that they resolved to withdraw their Zeppelins for the time being from Belgium and proceed with the difficult task of improvement. For two months Count Zeppelin's engineers have been engaged upon the following problems:—

"(1) To secure a higher flight for the dirigible in order to prevent an aeroplane getting above it, or, at any rate, to make the operation less easy.

"(2) To increase the dirigible's speed in order that it may escape pursuit, and especially to complete its raid in the dark and not be caught over the enemy's lines at dawn.

"(3) To strengthen its armament, and improve its aim in dropping bombs.

"(4) To protect it from bombs falling on it from above.

"Here are some particulars of what results the Germans have obtained so far.

"They have slightly increased the ascending power of some types [There is only one "type" of Zeppelin.—Ed.]

and by providing a greater number of motors have increased the speed by 25 per cent.

"They have installed an apparatus for the distribution of Hertzian waves [Otherwise "wireless".—Ed.] which will enable the operators to control for a distance of two miles the direction of aerial torpedoes. [Bosh.—Ed.] The number of machine guns on the top of the dirigible has been augmented. [Those who have recently seen the tops of Zeppelins say there are no guns.—Ed.]

"It seems that they have not been able to achieve any encouraging result in the armouring of the top of the Zeppelin or in the attempt to shape it like a pointed roof so that bombs should fall harmlessly down the sides. They have had to content themselves with adding to the number of interior compartments in the hope of losing as little gas as possible at each breach. [Which means adding weight as well.—Ed.]

"To sum up, they have succeeded in creating Zeppelins a little better armed, a little larger, with a little stronger ascending power, a little less vulnerable and considerably more rapid." [And about time, too.—Ed.]

* * *

The "Berliner Tageblatt" states that Russian aviators bombarded, day and night, the advancing German troops during the past week.

* * *

The "Daily Chronicle" special correspondent at Lugano sends the following amusing report about the latest German scare-ship:—

"The new model Zeppelin has recently been observed over Lake Constance, flying from and to Friedrichshafen about once a fortnight.

"While this Zeppelin has a blunt and cigar-shaped nose, like others, the upper part of the envelope is almost conical, rising to a point.

"There are two gondolas, armoured, with windows. They extend the whole length of the envelope. *The crew is large and has three blades* (!) There are two side screws as well as the main one at the stern.

"In the forward gondola there is a protuberance which probably conceals the machine-gun platform."

[Apart from the italicised sentence, which conjures up visions of fat Germans bristling with side-arms, the rest of the description is hilariously funny. An airship with a cone-shaped top is certainly a comic conception, and one wonders what the head-resistance and the balance would be like. Also, if two gondolas extend the whole length of the envelope, are they side by side, or does one telescope into the other? A Zeppelin with a "main" screw at the stern would be a curious sight. And it is not explained why a machine-gun platform should protuberate when the guns might just as well be inside the gondolas. The "Chronicle" man must try again if he wants to be plausible.—Ed.]

AUSTRIA.

An official statement issued in Vienna on August 6th says:—

The Italian airship "Citta di Jesi," flying above Pola, was brought down by our shrapnel fire.

RUSSIA.

The communiqué from the General Staff of the Army of the Caucasus issued at Petrograd on August 3rd says:—

Yesterday in the direction of Sarykamysh an aviator threw bombs on a large Turkish camp, creating great confusion.

* * *

The communiqué of August 5th says:—

Our seaplanes attacked a German gunboat near Windau and forced it to run ashore. The same machines attacked and put to flight an enemy Zeppelin and two seaplanes, one of which was brought down.

* * *

The communiqué of August 9th says:—

Yesterday a German fleet, consisting of nine battle-

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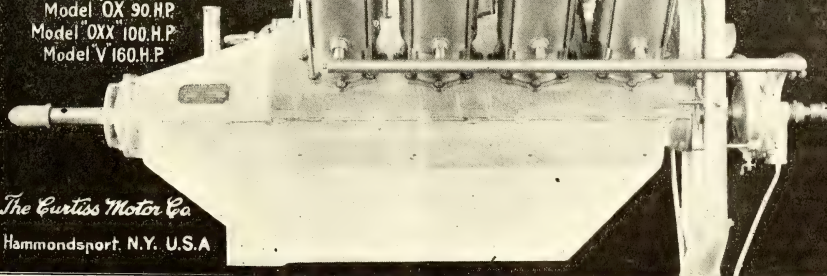
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ships, twelve cruisers, and a large number of destroyers, made persistent attacks at the entrance to the Gulf of Riga, but the attacks were everywhere repulsed. Our seaplanes, by throwing bombs, contributed to our success.

* * *

Mr. Stanley Washburn, special correspondent of the "Times" with the Russian forces, reported on July 31st that a German air raid on Warsaw took place between 7 and 8 that evening. Five aeroplanes flew over the city for an hour, dropping between 15 and 20 bombs. Seven people were killed and 14 wounded. Anti-aircraft batteries fired more than 100 shells, and claim to have scored two hits.

* * *

A telegram from Petrograd dated August 8th says that a German aeroplane has dropped several bombs on Vilna (on the Warsaw-Petrograd line). The church was set on fire.

ITALY.

The communiqué of August 6th says:—

Last night one of our airships bombarded the enemy's camp around Lake Doberdo, and although fired at by the hostile artillery, returned undamaged to its base.

Another airship effectively bombarded the railway line from Opicina. On its return it was attacked by an Austrian seaplane, which dropped three incendiary bombs at it from above, but was put to flight by the fire of the airship, which returned undamaged to our lines.

* * *

The following official statement was issued in Rome on August 6th:—

One of our dirigibles last night dropped bombs on Pola, where repeated incursions had been made with good results.

For reasons which it is not possible to ascertain the airship fell into the sea.

The crew, composed of three officers and three men, are safe, and have been made prisoners by the Austrians.

[From the Italian communiqué it appears that this was the "Citta di Jesi."—Ed.]

* * *

The "Giornale d'Italia" (Rome, August 4th) says that an Italian seaplane has flown over Pola and carried out an offensive operation.

* * *

P4, the dirigible which the Austrians claim to have brought down at Pola by shrapnel on 5th inst., was of the still lively though small and old class semi-rigids. She was a naval airship, as was the lost "City of Ferrara," and cubed some 15,000 feet.

Though she was only five times as long as broad, yet she managed to do just on 40 m.p.h. with two F.I.A.T. 50-h.p. engines driving two two-bladed 10-ft. air-screws. She was built in 1912, and appears to have done immense havoc before succumbing, one of her last feats being the destruction of a waterplane depot and a naphtha reservoir on two islands by Pola.

One of the old-time civilian pilots has given the sum of £40 to each of the five schools now training volunteer aeroplane pilots for award to the first of these pupils who passes for his military brevet and is accepted by the authorities as competent for service. Gold medals have been also offered with the object of speeding up the training of pilots.

If things continue to be done on the large lines of the first day of the war when 40 Italian warplanes flew over the frontier as an announcement of war, more pilots will be surely needed, waterplane-men especially.

Geographically, as Major Piazza used to insist, the

use of hydro-aeroplanes by the Italian forces, at any rate in Northern Italy, is almost the natural thing. Rivers, lakes and sea coast offer by far the greater "landing" area available in those regions. The expedition of waterplanes from Lake Garda a few days back bears out the contention.

Countess di Robilant is offering Frs. 200 (two hundred francs) for each aeroplane brought down by an Italian marksman. Some difficulty in awarding the recompense will, I predict, be encountered. So far Bari has the honour of first blood. If a few other people follow the example of this patriotic lady some people will be able to forgo their pensions when war shall cease.

The name of Giovanni Sabelli figures in the last Military Bulletin among those to whom commissions in the Aeronautical Corps have been given. (Lieut. Sabelli will be remembered as a popular personality at Brooklands and Hendon, and later as an officer in the Bulgarian Army.)

Putting things together it sounds as if the tale reported from Rome were true of how Gabriele D'Annunzio was that passenger who from Commander Miraglia's biplane recently threw comforting messages to the burghers in Trieste and bombs on their rulers' quarters. The messages in the liquid prose and actual "fist" of the sporting poet should be valuable windfalls to those afflicted souls when they are "redeemed."—T. S. HARVEY.

SERVIA.

It is stated in various papers that Lieut. Louis Paulhan has been promoted captain for chasing an Austrian aeroplane out of Servia. M. Paulhan was lent to the Servian Army by the French Government some time ago as chief instructor of the local flying corps. With him is M. Martinet, one of the best instructors yet seen, and formerly partner with the ever-to-be-lamented Legagneux in the historic aerodrome at Corbeaulieu, where life is a perpetual comedy with Martinet and Legagneux as the leading actors, and the rest of the school as chorus.

* * *

A despatch from Berlin states that during an air raid by Austro-Hungarian aviators over Belgrade the central railway station was set on fire by bombs. A wharf and barracks in the southern part of the town are also said to have been hit.

HOLLAND.

A telegram from Ymuiden, via Amsterdam (August 3rd), states that a German airship marked L19 was sighted by a Ymuiden steam trawler off Terschelling. The airship approached and flew several times round the trawler.

[This number L.19 would seem to indicate that all the new Zeppelins are being run by the German Navy.—Ed.]

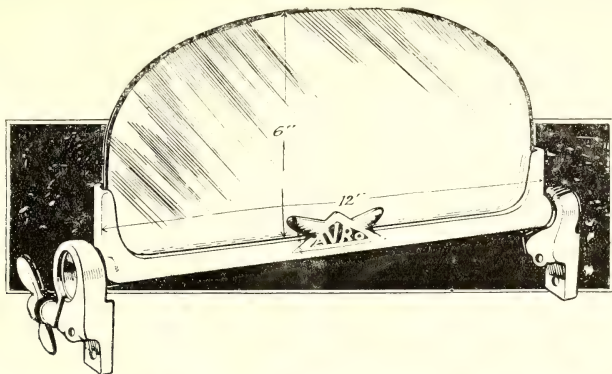
* * *

A message from Terneuzen, via Amsterdam, August 4th, states that the Dutch motor-boat "Cornelius," arriving from England, reports having been attacked in the North Sea last Thursday by a German aeroplane which dropped four bombs, but missed the vessel.

TURKEY.

A special correspondent at the Dardanelles writes:—

"At a casual glance the positions would appear to be deserted, for the Turk is taught before all else to keep concealed, so that his real numbers shall never be accurately known, but on one occasion he involuntarily gave himself away. One of our aeroplanes passed over his lines, flying very low. This was too much for the stolid Ottoman infantry, who, rising in their trenches, poured volley after volley at the intrepid aviator. It was then seen that every line of trench was fairly bristling with bayonets, showing the importance which the enemy attached to the position."



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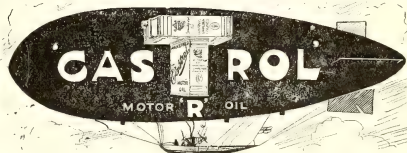


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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

AN EXCEPTIONAL NATURALISATION.

"*Tout comprendre c'est tout pardonner*" is a French proverb of necessity because it is mostly inconceivable to the English, whose womenfolk—chiefly breeders of proverbs, obstacles, and grievances—are among the bitterest on earth. Therefore, without knowing the exact inwardness of about ten thousand daily war-situations, it is impossible for you or me or the man in the Tube to judge of the justice or injustice of the various reproaches barked at the Government since the war began. Personally, in these times, one's only political colours are red, white, and blue—preferably with my own five stars added—over a wide ground of khaki; so I really cannot argue these matters from any party's standpoint. But of all the charges, the *laches*, with which the authorities have been taxed, none has been more insistent than that of failure to intern, and set to useful work, highly-placed aliens of enemy-country origin, whether naturalised or not. Well, as I said before, I don't know. However, when private enterprise—possibly backed by the far-off hope of Government encouragement—actually paid ten thousand pounds English to enable one such highly-placed alien to come over here at all—and this at least two years before the war broke out—only three conclusions are possible. The first, that all concerned were mad, or worse; the second, that, generally, the idea of the possibility of justification for many unexplained things is just conceivable; and the third, that in this particular instance those concerned could have done nothing wiser or more useful, farther-seeing and generally patriotic!

Of course, there may have been, long ago, one of those mysterious commercial understandings with the Government of which we hear so much; that do such credit to British powers of imagination and cheap journalism. All I can say, as a fact, is that three years ago, when the deal took place, one needed a mighty strong glass—with or without anything in it—to discover aught that looked like Government encouragement for any concern whatsoever outside their own Air-Graft Factory.

HOW IT WAS JUSTIFIED.

There was, again, ample justification in this case—and is still, more than ever, because three years ago we were just as certain to be at war to-day—as we had never been anything but the best of friends with the said country of origin, despite the Metternich tradition that has governed and ruined it for a century; and it is only a half-enemy to-day, dragged by a stronger power.

For our highly-placed one—we have to-day no more useful material ally—is no other than the Beardmore aeromotor, in its two standard models, of 90 and 120 h.p., both of six cylinders, and practically the same design. But for unforeseen circumstances, there would also be a wondrous 12-cylinder V-type edition of something like 300 h.p. That one may—let us hope—yet arrive independently, beyond all interference of any outside circumstance. Meanwhile, the two "sixes" seem good enough to go on with, especially since the Beardmore people also long ago obtained whatever rights there were in the all-steel, auto-stable biplane that had tried them hardest and displayed them best.

The eternal British money-measure of all things is, of course, a rotten one, the most debasing of all. This war was necessary, if only to force us to forsake it, for our own salvation. But, existing as it does—assuredly did—this presumption of value, rather more than proved, may be accepted in this case, since no one would spend ten thousand farthings, let alone pounds, merely to get a set of working drawings. In fact, the average money-worm expects the smaller sum not only to cover the patents, but the entire production of the new motor, so that he

may forthwith get a Government contract for its supply. Fortunately, the Beardmore Company happen to be engineers, as well as capitalists, of quite another kind, and so would have been assured of value before purchase of those drawings, let alone the motor's production, which has a way of bringing out difficulties and constructional defects that no drawings can foresee or provide for.

SOME OF THE SERVICE RECORD.

Already there were nine world's records to go upon, made in the latter part of 1911: two of them, for speed and distance combined, being 250 kilometre flights with a passenger as well as the pilot, while the first of the lot, for height, was achieved with two passengers. Then June of 1912 saw three more world's height records won, and another for vertical speed; while in August of the same year, in the British Military International Aeroplane Trials, with two dozen of the pick of British, French, and German machines competing with ten different makes of aeromotors, it was the Cody biplane, fitted with one of these 120-h.p. models, that won both the £4,000 international-section prize and the £1,000 British award; and this with a motor that had been in almost daily use for more than a year.

This last fact alone, when one considers the conditions under which its great pilot, Stanley Franklin Cody, was bound to work—for a highly skilled motor-mechanic he never was—affords to my mind better evidence of the enduring quality of the Beardmore aeromotor than any of its other records, then or since.

Then, in 1913—after the British production of Ferdinand Porsche's original design had become well established—the Martinsyde monoplane, a standard two-seater fitted with a 120-h.p. Beardmore, covered the 95-mile Aero-Derby course at over 72 m.p.h., and then only by a slight misdirection lost the race by a few seconds to Gustav Hamel's special racing machine, of considerably less surface. After which mainly came general service, irrespective of the record-making, which in one way and another has helped to add up the prize-money record of this design—practically unaltered from the first—to over £20,000, since it was originally installed in the earliest Etich machines.

It was in an Etich with one of these, one remembers, that Herr Friedrich made his famous Berlin-Paris-Hendon-and-back flight in two bounds either way. So that, altogether, beside the Etich, Cody, and Martinsyde, one has seen or known of these models being fitted to the Grahame-White and Wright biplanes, the Sopwith and Thomas seaplanes, the Blériot, Deperdussin, in France and Belgium, and the Jeannin, Auto, Union, Etich-Rumpler, Lohner-Daimler and Lohner-Arrow, Albatros, GfA, Bonhard-Kuhlstein, Harlan and Euler war-planes, as well as the D.F.W.'s, so well known at Brooklands as well as in Germany: the story in all cases being one of no trouble, eternal fitness to run and keep on, for any distance or time, and consistent reliability. No motor of any kind, at any time, can obtain a better sort of record than this: so one is not astonished to find this one not only in the service of all the Allied Powers, and most of the neutrals, such as the United States, Spain, China, and the Balkan States, but its prototype also the most numerously by lesser enemy.

Furthermore, Messrs. Beardmore, having won their motor experience and success in the best way—that is, through as many failures in the past as most people—have certainly contrived more than the majority of concerns with even longer motor experience. And that is, to make their edition every bit as efficient as the best of the originals.

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pinnacle *hors critique*. Even if examination proves that nothing better in any detail can be suggested, or would be advisable if it could, we are no less bound to examine. Coming, then, to a general survey of special points, the first and most noticeable is the grouping of the six steel cylinders in single units, each with its separate copper water-jacket, the battery being slightly offset from the crankshaft axis. One sees also that the said units are grouped so closely and compactly—almost as much so as in a monobloc, or a pair of threes—that a bearing between each crank is just possible. For lightness combined with strength, too, steel cylinders seem to be essential if the total mass-weight is to be kept down to anything like its average—for installations vary—of some ounces under 4 lbs. per brake-horse-power.

But, although single-mounting certainly does call for the most careful lining-up, and needs a great deal of the most accurately fitted attachment-bolt work on and about the cylinder-flanges, anything else is out of the question for steel cylinders, in the conventional practice which is best understood in commercial production and among motor-mechanics: with whom is necessarily the last word.

To be continued.

NO WONDER.

The creditors of Julian Osgood Field, late of Belgrave Mansions, Westminster, and now of Wormwood Scrubs Prison, met at the Bankruptcy Court. Lady Ida Sitwell is a judgment creditor for £7,000. His only asset is his interest in an aeroplane invention.

[The surest way to become a bankrupt in these days is to have any interest in aeroplane inventions, good or bad. A slide-rule plus a glib tongue is a much surer and quicker way to the National pocket and official favour.—Ed.]

FLATTERY.

Hugo Douglas Brodie was fined £25 at Glasgow for masquerading as a naval "flight lieutenant-commander." The Sheriff said the offence was due to Brodie's inordinate vanity, and his impertinence was unique. [One might suggest that the rank is also.—Ed.]

POISON IN AIRCRAFT WORK.

Industrial diseases under the Workmen's Compensation Act have now been extended to include "dope poisoning," that is, poisoning by tetrachlorethane or any other substance used as or in conjunction with a solvent for acetate of cellulose, or its sequalee in the process of manufacturing aircraft.

NEW COMPANIES.

The Fairey Aviation Co., Ltd., has been registered with a capital of £35,500 (25,500 10 per cent. pref. shares, of £1 each, and 200,000 deferred shares of 1s. each). Objects: "To manufacture, prepare, let on hire and deal in

aeroplanes, waterplanes, and aerial conveyances and aircraft of all kinds. To acquire, provide, build and maintain hangars, garages, sheds, aerodromes and accommodations for or in relation to aerial conveyances, etc., and to adopt an agreement with C. R. Fairey and F. H. C. Rees."

Signatories:—M. Benabo, 76, Median Road, Clapton, N.E., and H. L. Hamlyn, 20, Rostrevor Road, Fulham. First directors:—C. R. Fairey (permanent, subject to holding at least 7,500 of the shares allotted to him under purchase agreement), and others to be appointed by the subscribers. Qualification of directors, other than subscribers to the Memorandum of Association, £300. Remuneration of chairman, £300; of other directors, £250.

Mr. Fairey will be remembered as an authority on inherently stable model aeroplanes in the early days of aviation, and for some years he has held an important position with the Short Bros.

Aerial Express, Ltd., has been registered with a capital of £300, in £1 shares. Objects: "To assist any persons, companies, or corporations to manufacture, buy, let on hire or deal in aeroplanes, flying machines, balloons (dirigible or otherwise), and all or any kinds of machines for traversing the air; to promote companies having the same objects, etc.

Signatories:—F. J. Abbott, 147, North View Road, Hornsey, N., and W. Lumb, 16, Hailsham Avenue, Streatham Hill, S.W. The number of directors is not to be less than two nor more than five; the signatories are to appoint the first. Qualification, £10. Remuneration, £25 each per annum. Private company.

It is understood that the scheme is connected with a South Coast town, where in time of peace much business might be done in passenger-carrying.

GLASS v. BULLETS.

The accompanying illustration does not depict a stress diagram of some new and wonderful aeroplane production by Government experts, as one might, perhaps, suspect from its general chaotic appearance. It is, in fact, merely a windscreen fitted to a Crossley car belonging to the Royal Flying Corps. A shrapnel shell exploded near the car, and it will be discerned that the glass was struck by eight shrapnel bullets. Only one of these bullets penetrated the glass, and that one only just got through.

The glass is still perfectly strong and rigid, and, except for the one small hole, is sufficiently sound to continue its work indefinitely.

Its virtues are now so well known that it is almost unnecessary to state that the glass in question is the product of the Triplex Safety Glass Co., Ltd., a firm which has already done very much to decrease the perils of both aviators and motorists either at home or on active service.



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CHAPTER VIII.

ILLUSTRATING THE RESULTS OF MISORGANISATION.

In many instances since last August, orders have been accepted by firms who have neither had the material required in stock, nor have they placed their order or made inquiries regarding supplies until they have received their contract. The result has been that they have invariably failed in their first deliveries, and more often have not delivered anything at all by the date when the order should have been completed.

Such lack of foresight or miscalculation has generally led to further delays, and the tendering of other and now almost proverbial war reasons for non-delivery. The primary reason may, perhaps, be quite legitimate, namely, pleading lack of material, but the ultimate opinion formed by the customer can be that the firm suffers from bad management and lack of organisation.

It should not be assumed that such details as lack of stocks are going to spell mis-management, but it is the principle of the method employed that counts. It may be argued that no works could possibly keep a minimum stock record to comprise such stocks as would enable a factory to tackle any order that may come along, as for instance, from a mess tin to a complete aeroplane, and no one would seriously make such a suggestion. On the other hand, the plea that material could not be obtained for the work, followed by a further plea that tools could not be obtained to enable the work to proceed, have, during the last few months of this War, not coincided with one another.

Apart from this, after the majority of engineering firms had become settled down to the production of war material they had become acquainted with the requirements of the materials called for in the majority of cases, and yet, even after seven months of war, and, in many instances, after goods were two months overdue, the lack of material has been put forward as a genuine excuse for the work still waiting to put out to the shop.

The writer is acquainted with several instances where munitions of war of a particular kind have been delayed in delivery owing to the lack—one might almost say absence—of organisation in factories which had accepted orders but failed to deliver until some eight or ten weeks after the due date.

Let us invent a purely supposititious case made up of things which have occurred in different places.

In this case an order was placed for a quantity of articles, such quantity comprising five or six different sizes of the same article, of which some of all sizes were of great importance to the main contractor. Primarily, the first sub-contractor found himself incapable of doing the work at all; but, as he was unable to appreciate the need for the articles in his frantic endeavour to make money out of the country's misfortune, he passed the order on to a firm at two-thirds the price, and got it accepted. For fear that the main contractor would cancel the order and go direct to this sub-sub-contractor he used every endeavour to hood-wink the main contractor by every excuse he could lay his hands on.

The delivery date approached, the sub-sub-contractor then pleaded lack of material, but this was immediately supplied by the main contractor, and some small quantities of the articles were forthcoming some four weeks after date. A further delay then occurred, and after further investigation this sub-sub-contractor pleaded lack of other material, of which he had previously estimated he had "plenty," this was supplied, and further supplies were forthcoming. It was then found that no effort had been made to turn out one particular size, and, on investigation, lack of labour through enlistments was pleaded. This plea, however, was investigated, and ultimately changed

to one of lack of the necessary tools, owing to the fact that 80 per cent. of the labour employed was female labour. This lack of tools did not occur through any misfortune with any that may have been in stock, but occurred no less than four months after the order had been received, and simply because they had not been ordered, nor had any endeavour been made to make them.

These tools were made and supplied, but as soon as this sub-sub-contractor found that his last plea to cover up his mis-organisation and general dilatoriness had been averted, he complained that the price was so low that there was really no money in the work, and his own customers' business, incidentally not in the nature of war material, was more attractive and paid better.

Had it not been for the fact that the main contractor knew the difficulties in manufacturing this particular article, and also that he knew that this sub-sub-contractor could do the work if he liked, the original order would have been cancelled and placed elsewhere. As it was, the main contractor "hedged" for a quantity with another firm. In this case, the work was not good, and therefore, rejections by the Government inspectors had to be dealt with.

This instance is typical of the root and cause of so much delay in the delivery of munitions of war. Primarily, the case of the irresponsible agent thirsting to make money out of the War by hook or by crook, and, secondly, the case of the mis-organised factory where the management tumble headlong day after day, relying on excuses which they know perfectly well are illegitimate, and which are not proven even by subsequent rates of deliveries.

Taking the case of this sub-sub-contractor having been supplied with material as he was, that plea is at once discounted. The plea of lack of tools is purely one of mis-management, seeing that it was not made until some eight weeks after the delivery date and four months after the order had been accepted. The plea of lack of labour automatically disappeared, because 80 per cent. of the employees are girls, and, therefore, not required for enlistment in H.M. Forces.

Bearing on this chapter of Raw Material Stores, it is interesting to note that this sub-sub-contractor had no organised stores at all. All material was just stacked at the side of the shop against the wall or on the floor. After making a large quantity of certain parts quite satisfactorily, he was suddenly "up against it" when he received back, rejected, a consignment of three to four hundred of these articles. The stated reason for the rejection was that the strength of the samples tested by the main contractor was found to be lower than specified—doubtless, a case of the wrong material being used. The result, in fact, was that Mr. Sub-Sub-Contractor practically threw up the job, and delays in delivering certain munitions were likely to be aggravated.

(To be continued.)

THE DEATH OF MR. CARNT.

Mr. Edward Carnt, managing director of the well-known shipbuilding firm of Messrs. J. S. White and Co., Gosport and Cowes, died at his residence, Westwood, Wootton, Isle of Wight, on the afternoon of August 5th.

His death, which was largely caused by sheer overwork, is a blow to aviation, for though he has been connected with the building of aircraft but a short time, his recognition of the importance of aircraft to the Navy made it possible for his firm to engage on experimental aeroplanes of a size and type at the time considered extraordinary. Had he lived it is certain that his unprejudiced mind would have rendered even greater service in the future.

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Though a comparatively young man, he had won his way to a high position by sheer ability. All who knew him will feel that they have lost a personal friend and that the country has lost a most valuable servant, for he died in the country's service as truly as if he had fallen in the field.

The funeral took place at Whippingham, Isle of Wight, on August 9th, and was attended by Admiralty officials, naval officers, the directors, departmental managers, and several hundred employees of the firm, and representatives of public bodies in the Isle of Wight, where Mr. Carnt was universally loved and respected.

Canon Clement Smith, rector and Chaplain in Ordinary to the King, officiated, assisted by the Rev. Charles Collis. The chief mourners were Engineer Captain A. J. Carnt, R.N. (brother), Mr. S. G. Carnt (nephew), and Engineer Commander David Bennett.

Among others present were Engineer Vice-Admiral Sir John Durston, Sir James and Lady Marshall, Engineer Commander C. W. J. Bearblock, representing Admiral Sir Henry J. Oram, Engineer-in-Chief of the Fleet, Admiral Sir Algernon and Lady de Horsey, and Sir Godfrey Baring, M.P.

THE WEEK AT HENDON.

The long series of fine week-ends at Hendon has not yet started. On Saturday last it was again windy and showery, and very little flying was done. Mr. Prodger gave a very creditable exhibition on a Beatty-Wright biplane for the benefit of those spectators who faced the uncertainties of the weather, and Messrs. Manton and Osipenko also flew on G.-W. biplanes, but it was not a pleasant afternoon.

On Sunday there were showers in the early part of the afternoon, but they just missed Hendon, and later on it turned out an ideal day for flying. There were quite forty passengers carried in various machines.

Mr. Prodger flew the 60-h.p. Beatty-Wright, and Mr. Roche-Kelly the 50-h.p. machine of similar type, banking and playing around as these useful biplanes will. Mr. Osipenko took many passengers up in the five-seater. On one occasion he had with him Mr. J. H. Ledeboer (who has handicapped so many races), Mr. A. G. Reynolds (who for years acted as timekeeper for the various sporting events, but who had, strange to say, never been up before), and Mr. T. Kemp Walton (the secretary of the Grahame-White Aviation Company).

Messrs. Manton and Winter made many flights on G.-W. biplanes. Mr. J. L. Hall brought out a Caudron, Mr. Smiles an L. and P. machine, and Messrs. Baumann and Virgilio Ruffy-Baumann biplanes.

The latter, by the way, has lately been demonstrating his ability, not only to fly with hands off, but to land in the same manner. The trick looks very effective, and shows how well he understands his machine; but there is a suspicion that he controls with his knees.

In the evening school work became quite boisterous, and twelve or fourteen machines were to be seen on the ground or in the air, avoiding one another in remarkable fashion. One pupil collided with the fence, and another, who was making a second attempt to get his brevet, his first having ended prematurely through a petrol-pipe bursting, made a forced landing near the railway owing to engine trouble, and again had to postpone his official tests, which was distinctly hard luck.

Mr. Thomas E. Ritchie has been appointed works manager of the Grahame-White Aviation Company, Ltd. He is a trained engineer, and formerly held a responsible position with Messrs. Royce, Ltd., assisting in the building of the first Rolls-Royce car. He is an associate member of the Institute of Mechanical Engineers, and also of the Institute of Electrical Engineers. His energy and enterprise are considerable, and he is a most useful acquisition to the company.

Only those personally connected with the London Aerodrome can have any idea of the many difficulties which must have arisen since the outbreak of war, owing to the presence of the ordinary commercial organisation of the aerodrome and the R.N.A.S. It is, no doubt, to the benefit of all concerned that the Service sheds, offices, and personal quarters have now been moved to the eastern end of the ground, where they are all concentrated in one fence, with a separate entrance.

Mr. Reginald Kenworthy, after taking extra practice with the Beatty School, has now arranged to become an additional instructor for Mr. Beatty. He is a most excellent Caudron pilot, and a few days ago took one of these little 35-h.p. machines, specially constructed for brevet work, to a height of 1,750 feet in less than fifteen minutes. His future career should be worth watching.

A new 45 Anzani-Caudron is now almost ready to be added to the Hall "stable." In span it is six feet wider than usual, and is specially slow for school work.

Lieut. Philippotts, of the 7th Suffolk Regiment, who recently took his brevet at this school, and distinguished himself while doing so by dropping high-explosive chalk bombs in the direction of his observers, has obtained an extension of leave in order to help for a time with the work of instructing.—D. W. T.



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ANOTHER RETURN TO BUSINESS.

The "Morning Post" announces that Mr. C. Grahame-White has, with the approval of the Lords Commissioners of the Admiralty, resigned his commission as Flight-Commander in the Royal Naval Air Service, in order to devote himself to the supervision of the Government's contracts for aeroplanes entrusted to the Grahame-White Aviation Company (Limited).

Mr. Grahame-White is to be congratulated on arriving at this decision, though it may appear somewhat belated. No man can serve two masters and an officer in uniform cannot well do justice both to his Service and to his commercial enterprises. It is to be hoped that now that Mr. Grahame-White is enabled to concentrate his energies on his business the Navy may benefit more by a resultant increase in the output of aeroplanes than it did by his divided interests.

MR. ROCHE-KELLY AT LEEDS.

On August Bank Holiday it is the custom to hold a fête at Leeds in aid of the local workpeoples' Hospital Fund. Last year Mr. Reginald Carr gave a demonstration of flying on the Grahame-White biplane familiarly known as "Lizzie," and this year Mr. Roche-Kelly went north with a 50-h.p. Beatty-Wright single-seater biplane.

The weather was bad, and the small ground presented many difficulties, the only way out being through a gap in some trees, but Mr. Roche-Kelly knows his machine, and on Monday he gave two exhibitions at 3.30 and 7 o'clock, as announced, before a record crowd of 65,000 people.

On Tuesday he repeated the performances at the same hours, and had a fine reception from the spectators, who evidently knew something about flying and appreciated the spirals, banking, and other examples he showed them.—D. W. T.

School and Weather Reports.

	Mon	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast	Rain	Show'y	Fine	Fine	Fine	Fine	Fine
East Coast	Fine & Windy	Show'y	Fine	Fine	Show'y	Fine	Fine
Hendon	Fine	Show'y	Fine	Fine	Show'y	Fine	Wet to Fine
Lake District	Wet	Show'y	Fine	Wet	Fine	Fine	Fine

HENDON.

AT THE BEATTY SCHOOL OF FLYING, LTD.

Week ending August 1st, 1915 (delayed in transmission). Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder and A. E. Mitchell.

Pupils with instructor on Beatty-Wright machines: Messrs. Arbon (57), Bond (30), Crossman (16), Delves (45), Eaton (20), Fox (10), T. Jones (40), King (49), Robb (40), Ross (12), Rutherford (40), Theo (10), Tomlinson (45) and Onley (36).

On Caudron machine: Alcock (25), Arter (30), Banks (10), Berridge (20), Boyen (13), Broadbent (15), Cadogan (5), Collett (15), Cox (10), Davison (10), Fawcett (5), Fellowes (30), Goodfellow (25), Greenhill (30), L. F. Jones (35), Kirkwood (20), Litton (10), Moxon (10), Middleton (10), Nash (25), Overton (10), Owen (35), Rutherford (25), Smith (10), Spicer (15), Staggs (20), Thompson (10), Tollhurst (45), Tomlinson (5), Tremlett (5), Whincup (10) and Willmet (5).

Two very good certificates were taken, the one by Mr. Robb on Thursday, after just over 2 hours' actual flying, the other by Mr. Rutherford on Friday after 3½ hours' flying.

Machines in use: Beatty-Wright dual-control and single-seater biplanes, Caudron tractors.

Exhibition flights were given on Thursday, Saturday and Sunday, and 6 passengers were carried.

Messrs. Blandy and Kenworthy continued extra practice.

AT THE BEATTY SCHOOL OF FLYING, LTD.

Week ending Sunday, August 8th, 1915.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder and A. E. Mitchell.

Pupils with instructors on Beatty-Wright machines: Messrs. Arbon (35), Banks (25), Delves (35), Dickenson (30), Eaton (15), Fitzherbert (24), Fox (10), T. Jones (29), King (39), Morgan (25),

Onley (20), Ross (26), Sampson (30), Theo (16), Tomlinson (40), Vickers (15) and Wiles (18).

On Caudron machine: Messrs. Alcock (15), Arter (15), Boyen (15), Broadbent (5), Cadogan (15), Coates (10), Collett (10), Cox (20), Davison (5), Fawcett (10), Fellowes (5), Goodfellow (10), Greenhill (5), L. F. Jones (5), Kirkwood (15), Middleton (5), Moxon (5), Nash (15), Nicholson (5), Owen (15), Smith (5), Spicer (10), Thompson (5), Tollhurst (10), Campbell (10) and Thomas (20).

Mr. F. W. R. Banks took his certificate on Saturday morning.

Machines in use: Beatty-Wright dual-control and single-seater twin-propeller biplanes, Caudron tractors.

Exhibition flights were given on Monday (Bank Holiday) and on Thursday, Saturday and Sunday, and three passenger flights were taken.

Extra practice was taken by Messrs. Kenworthy, King and Everidge.

AT THE HALL SCHOOL.

The following pupils passed for pilot's certificate: Messrs. Booker, Snowden, Lieut. Philpotts and Mr. A. E. Gay.

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Pupils with Mr. Stevens: Messrs. Gay (3 circs. and 6 figs. of eight), Lieut. Phillpotts (4 circs. and 1 fig. eight), Mr. Booker (one eight), Mr. Snowden (one eight) and Mr. Gordon (6 circs. and 2 eights).

Pupils with Mr. C. M. Hill were: Messrs. Hatchman (28 mins.), Mason (10), Hamer (10), Lieut. Jowett (30), Mr. Russell (14), Yonge (28), Gordon (32), Punnett (4), Bangs (24), Bell (40), Wilkins (14), Huggan (8), Watson (26), Wenner (4), Goodrich (32), Arnshy (16), Drew (32), Hooker (18), Littlewood (30) and Butterworth (8). All doing straights and half-circuits.

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Instructors for the week: Messrs. M. G. Smiles, W. T. Warren and James.

Pupils doing straights or rolling alone: Messrs. Woodley, Roe, Sargood, May and Frost rolling. Messrs. Sykes, Moynihan, Maze and Wynne straights.

Figures of eight or circuits alone: Messrs. Welsford and Jacques.

Lieut. Chapman passed his certificate tests in very good style on Saturday evening after only 11 days' tuition, and on August 1st M. Jacques completed his "ticket" in fine form.

Three Caudron-type tractor biplanes in use.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Beare, Gasson, Roach-Fierson, Smethurst, Corry and Ford.

Circuits and eights with instructor: Prob. Flt. Sub-Lieuts. Blake, Douglas, Barrington, Murray and Sieveling.

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Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

Pupils with instructor on machine: Messrs. Belton (26), Young (28), Bailey (24), Ball (8), Liddell (18), Hughes (30), Prothero (28), Stewart (30) and Muspratt (30).

Doing straights or rolling alone: Messrs. Ralton (42), Gardner (38), May (2), Wilson (42) and Hodgson (30).

Eights or circuits: Fitzsimons (45) and Wallis (10).

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Machines in use: Ruffy-Baumann (60 and 50 h.p.) and Caudron type (50 h.p.) tractor biplanes.

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Week ending August 1st (delayed in transmission). Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with instructor on machine: Messrs. Benson (30 mins.), Inglis (33), Lawton (21), Part (60), Robertson (41), Ridgway (49) and Yates (32).

Pupils with instructor in passenger's seat: Messrs. Barber (29), Laidler (17), Macaskie (14) and Macintyre (42).

Figures of eight or circuits alone: Messrs. Slingsby (45) and Sibley (58).

Mr. Buck figures of eight (52 mins.).

Mr. S. J. Sibley took excellent ticket, landing very near mark each time.

Machines in use: N.A.C. propeller biplane.

Several passengers carried and flights by W. R. Ding and Parker.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

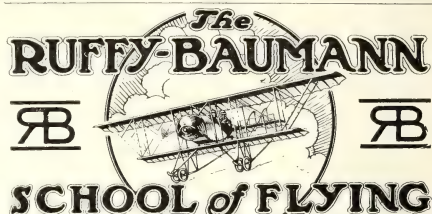
Pupils with instructor on machine: Messrs. Buck (20), Inglis (26), Latch (22) and Lawton (19).

With instructor in passenger's seat: Messrs. Macaskie (31), Part (12), Robertson (22) and Yates (20).

Certificate taken by Mr. R. Buck.

Machines in use: N.A.C. 50 Gnome biplane, N.A.C. 80 Gnome monoplane.

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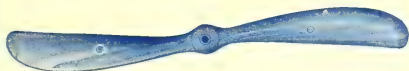
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WEDNESDAY, AUGUST 18, 1915

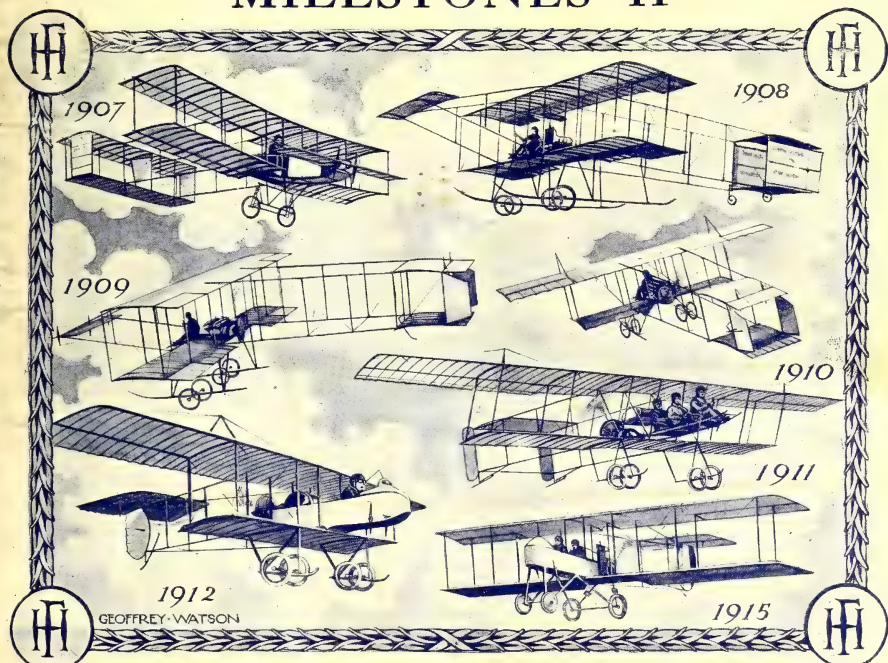
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ON UNREASONED OPTIMISM.

These out-of-season optimists make me tired. Here we are with the war not half over—barring its possible sudden termination by a revolution in Germany—and no prospect of any immediate crushing victory by any of the Allies anywhere, and yet some people would like us to believe that it is all over bar the shouting.

The sensible optimist says to himself: This is a thick-headed country, but some day it may wake up and kick out the incompetents and nepotists and grafters who are now running it, and some day a really strong man may arise to lead it to a glorious victory; and, meanwhile, the national stupidity may help it to muddle through without a serious defeat.

These other people talked about "drawing the enemy into a trap" at Mons, when really the British Army very sensibly ran away, under the orders of its chiefs, before the overwhelming numbers of the enemy discovered by the Royal Flying Corps, and left a small rear-guard which, thanks to its being handled with something very like genius by Sir Horace Smith-Dorrien, was not annihilated as it ought to have been.

Similarly, these people talk about luring the Germans into Russia for their destruction, and draw absurd parallels with 1812. There was not much luring in 1812 either. The losses at the crossing of the Beresina and at the battle of Borodino would provide quite respectable casualty lists even by modern standards. If my memory serves, there were 45,000 killed and wounded on each side at Borodino, which rather conveys the idea that the Russians tried to prevent Napoleon from reaching Moscow.

Now, Napoleon may have been a greater general than von Hindenberg or von Mackensen, but he had not their organisation behind him and he had not their aircraft in front, otherwise history might have had a different tale to tell. Well-organised mediocrity working in whole-hearted co-operation will beat unorganised genius every time. So far we have not seen much genius about the Russian commanders, and organisation has never been the Slav's strong point. Hence the crushing defeats the Russians, despite their mere numbers, have suffered lately from the perfect organisation and co-operation of the Germans.

These journalists who scoffed at the German victories and talked of using Warsaw as a lure would go on talking so if Moscow were occupied and they only had the mines of the Ural Mountains as ground-bait. They always remind me of the comedian describing a street row, when he says of his enemy: "He ran like a coward, but he couldn't catch me."

A BROKEN REED.

Let us make up our minds that France and Britain have got to see this thing through alone. All through the piece we have trusted too much to Russia. We were bluffed semi-officially into believing that story of the Russian army passing through from Scotland, just to allay panic. We were told that ever since the Japanese war Russia has been a reformed country, that the people in high places had given up grafting, that the people in

the low spots had given up nihilating, that the lamb was lying down peacefully inside the lion, and so forth.

And then, when the Russian army gets into action, we find it short of everything except courage: short of material, short of officers, short of generals, short of railways, all of which have been paid for by the Russian people.

We actually find semi-officially inspired journalists cracking up the splendid fighting of Siberian battalions—men of the same breed as the wild woolly Chun-Chuses, such as some of our officers may have met in China—and the steadiness of Turkestan troops, a people who are a trifle wilder than the Pathans out of whom our officers make frontier corps. The population of European Russia is liable to universal military service and is big enough to protect itself without the help of Asiatic troops, so it appears as if it had not been organised and equipped before the war, and that the far distant tribes who always carry arms, which they buy for themselves, had to be roped in to supply the deficiency, much as we brought over trained Indian troops to fill the gaps due to our own unpreparedness.

The Russians are magnificent fighters, but they cannot be expected to hold up the whole Germany army for our benefit till we get rid of our mess and muddle and settle down to business. I do not suggest that Russia is going to cave in and make a separate peace, but I do say that Russia cannot make a counter-attack for months, and perhaps years to come, and so we may as well make up our minds that we have to finish the war with the help of the French—or, rather, that the French have to finish the war with our help, considering that the French hold a front of more than 300 miles and we hold about 30.

THE VACANT AIR.

It is only a few weeks since these same senseless optimists were trying to persuade us that the R.F.C. had chased the German aeroplanes out of air. They quoted Sir John French's "marked ascendancy" phrase till one was sick of seeing it, and bled out about the "command of the air," and "personal dominance," and so forth.

It was an undisputable fact that German aeroplanes were few and far between for a couple of months. Young and pugnacious officers have lamented to me that though they had fast machines to fly they could find nothing to chase. Some said that they had not seen a German aeroplane for a fortnight or three weeks on end.

The optimists heard much the same thing and humbugged themselves into believing that the German pilots were afraid to face our men, and they were foolish enough to try and make their readers believe it also. This was a most dangerous and unpatriotic thing to do, for it added to the sense of false security which has already done so much to foster the apathetic attitude of the people of this country.

Let us, therefore, investigate the true position of affairs.

WHERE, AND OH WHERE . . . ?

Several weeks ago I suggested that the absence of German aeroplanes was due to the German high authorities deliberately saving up their best machines and pilots with the intention of hurling them in mass against our people and simply driving them out of the air by sheer weight of numbers. It appears that I was not very far wide of the mark, but certain events which have happened since then throw more light on the matter, and also, fortunately, give us warning of what to expect, if only those controlling military aviation will study the question carefully and will put two and two together.

In the first place, consider the Russian defeats, the German preparations for them, and the air work necessary to their success.

The German troops would be massed at certain strategic points. An enormous force of aircraft would be necessary to co-operate with them. These aircraft would be drawn from the reserve stocks and from the best of those on the West front. And, practically all the best pilots from the West would be sent to the East to fly them.

Consider the East front for a moment. It extended from the Baltic by Windau, right down into Poland, round into Galicia and so to Bessarabia and the Roumanian frontier. It is not merely the length of the front that counts, but the distance behind it over which aircraft would have to penetrate to gain the information they required.

In Flanders a flight to a point 30 miles behind the enemy's lines is sufficient to show whether troops are massing at any of the important junctions whence attacks on our short line can be launched. Therefore a flight of an hour or so is generally enough for reconnaissance. On the Russian front, where roads and railways are scarce, it is necessary for the German air scouts to go 50 or 100 miles behind the Russian lines to find a junction of roads or railways of definite strategic importance, consequently instead of an hour's flight four or five hours may be necessary.

WATCHING A RETREAT.

At the same time the small tactical movements just behind the fighting line must be followed with minute care. Defeated troops must be watched to see whether they are retiring in good order or simply bolting. On the accuracy of such observation the High Command has to depend to tell him whether the enemy is making a strategic retreat to a pre-arranged point at which he will meet with a firmer resistance, or whether by throwing a mass of troops on the rearward he may overwhelm it and break through in pursuit of a disorganised rabble which it is endeavouring to protect.

The direction of an orderly retreat is, in such case, of prime importance, for it indicates clearly the points of concentration of the defeated armies, and, these points being known, the attacking commander can then move his own troops towards those points with the greatest economy of time and material.

Such a brief consideration of the question shows how important a very large supply of aeroplanes was to the German success. And, when one remembers the heavily wooded nature of much of the country and the difficulty of following the movements of troops therein—as has been pointed out in letters from German aviators, published in German papers and translated into this paper—one perceives that far more aeroplanes would be needed for the work than for an equally thorough system of reconnaissance over more open country.

THE NEGLECT OF THE WEST.

In order to carry out this work with characteristic German thoroughness it would be necessary to denude

the Western front of its aircraft, and, as the Germans had no intention of attacking the Allies, it mattered nothing to them whether the French and British aeroplanes burnt much petrol over their lines or not. If they chose to do so, they did at any rate provide useful practice for Archibald and his crews.

In fact the Germans were contemptuously indifferent to what happened in the West, so long as they went from victory to victory in the East—and when one comes to think of it, Przemyśl, Lemberg, Cholm, Ivan-gorod, Siedlce, Prasnysz, Windau, Mittau, Novo Georgievsk, Warsaw, and so on, make rather a pretty list of victories, even if you cannot pronounce them. So one cannot blame the Germans for being careless about the West.

The only pity is that we did not know all about it before and prepare accordingly, so that we could have hit hard at the German lines while there would have been difficulty about reinforcing them. Still, the real blow may be delivered somewhere else altogether. If it is, one may be able to believe once more in British generalship. If it is not, well, we can always blame the British workman—who deserves it anyhow—for not providing munitions. Meantime, this paragraph may be filed for reference, in case the expected comes off.

THE REAL REASON.

However, what I set out to explain is that the absence of German aircraft has been due to German strategy and to German victories elsewhere, and not to the R.F.C. having won the Command of the Air, about which we have heard so much. It is no reflection on the R.F.C. to make this statement, and the R.F.C. officers know it.

Mounted and armed as the R.F.C. pilots have been, it is immensely to their credit that they have done what they have done. No other country's pilots could have done better, and few if any could have done as well. Therefore, it is no addition to their honour to claim for them victories which they have not won.

Given an equally good machine, with an equally reliable engine, and equally heavy armament, which he has not got, the average R.F.C. pilot and machine-gun artist will whack the average German crew every time. But he and his comrades will not drive the German aircraft out of the air till they outnumber them as heavily as the British Fleet outnumbered the German Fleet. And that is unthinkable for years to come.

BEAST OR NOT.

The German may be a beast, but he is a brave beast, and sometimes a chivalrous beast—as the little exchanges of courtesies between the German and British aviators show—and he is, above all, a clever beast. So clever in fact that when he has obtained certain valuable information about the movements, or stationariness, of British troops at certain strategic points, he may run away home with it rather than stop for the fun of having a scrap with a British pilot on a slower machine and with only one machine-gun against his two. You see that one machine-gun may conceivably have the luck to hit his engine and bring him down, and so bang goes all his valuable information, and bang goes also one of the few aeroplanes left on the West front.

Which idea is commended to the consideration of young and enthusiastic pilots who feel that they have nearly stopped the war when a big Aviatik suddenly opens out its engine and runs away a few thousand feet above the utmost limit of the B.E.2c., which is flying them because they have not had enough experience to fly it.

THE NEW PHASE.

Then, only a very few weeks ago the German "battle-aeroplanes" began to arrive. Friend "Fritz" with his



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two fuselages and his three engines. The twin-engine Aviatiks, with the machine-guns fore and aft. And the 200-h.p. single-engine tractors also with machine-guns, as described last week. Naturally, these were tried on the West front. They were not needed against the Russians, for the Russian flying service had been proved powerless against the Germans ever so long ago.

Barring a few twin-engine Sikorskis, the Russians had nothing but home-made versions of French aeroplanes, of types which were discarded by the French Army after a few months' experience of real war. And the Russian-built motors were certainly not more reliable than their French originals. They had some hundreds of machines at the beginning of the war, but they did not last long in the hands of the Russian pilots, whom their personal friends would call dashing and heroic, but whom a steady-going soldier who wanted efficiency and not display would call foolishly reckless.

Consequently, any old German aeroplane was good enough for the Russian front so long as it would stay in the air. All the fine new long-distance Aviatiks and Albatroses, with the new 100 h.p. and 120 h.p. Merc. and Argus engines, slower than the fast British machines, but always able to outclimb them, were wanted for strategic reconnaissance; and the older or less efficient machines were good enough for tactical reconnaissance or artillery spotting, where light loads of petrol for short flights could compensate for their loss of lift.

It all seems a fairly logical assumption, does it not? I have no inside information on the subject, but of late the Russian communiqués and the piffant reports of Petrograd correspondents have taken to mentioning German aeroplanes, after a lapse of many months, the latter, as usual, adopting that contemptuous tone which seems the fashion among such correspondents when the enemy is getting the best of it. One may therefore deduce therefrom the existence of some thousands of German aeroplanes along the Russian front—not forgetting that Germany has to supply most of Austria's requirements and all of Turkey's.

AND THE NEXT PHASE.

When the time comes for Germany's big push in the West—which ought to be early in September, in the hopes of winning Calais, at least before settling into winter quarters in the trenches—then we shall see the flocks of Aviatiks and Albatroses back again, and added unto them much more than seven devils worse than the

first, in the shape of "Fritzes" and "super-Fritzes."

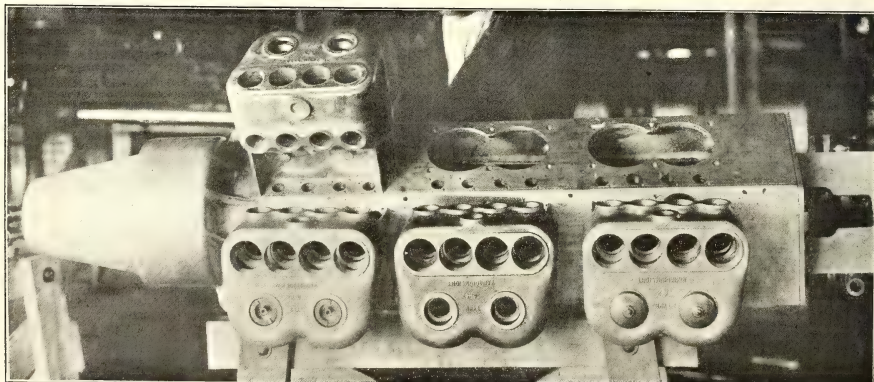
The point is, have we got anything capable of meeting them? Has Mr. Tennant's boasted multiple-engine aeroplane materialised yet? Have we any real battle-aeroplanes, naval or military, to beat off the attacks of superior numbers of German machines, or are the R.F.C. to be expected to do it all on B.E.2cs. and Avros and Bristol scouts, plus some Moranes and Voisins that the French don't happen to want?

Of course a mere journalist may not inquire officially, and he may not make statements one way or the other. Also Parliament is not sitting, so no questions can be asked there, and if it were the questions would not be answered. I therefore recommend R.F.C. officers to start asking the authorities themselves, on the principle of the good old commercial motto, "Ask for so-and-so and see that you get it."

It is quite a long time—two years or so—since General Henderson asked for fighting aeroplanes, and he had not got them when Mr. Tennant last evaded questions in the House a few weeks ago. What the Royal Aircraft Factory gave him in answer to his request were the fatal F.E.2, and failures like the F.E.2c, the R.E.5, the B.E. 8, and the S.E.4, while independent and formerly despised constructors gave him the Avro two-seater and the Bristol scout and the Vickers gun-carrier. It seems rather a pity that some of those hundreds of thousands of pounds—it must run into millions by now—were not allotted for experiments outside of Farnborough. We might have had quite several Anti-Fritzes in the air before ever Fritz himself appeared.

As for that hoped-for revolution in Germany, read this, on that very subject, from an American clergyman of unimpeachable honesty: "But in the case of these young men, marching to the front with great sounding choruses, there is no melancholy. The spirit is the opposite; eagerness, a tremendous solidarity of will, counting the cost as nothing. Whatever unwillingness there may have been at the beginning of the war, there is nothing of that present now. I can truly say that the strong impression is left on me that these people tremendously believe in their cause, have confidence in themselves, and are ready to make all sacrifices. They may be deceived, they may be in the wrong, they may be all that their enemies paint them; but that is the impression they leave on seeing them, and not getting impressions from merely reading."

Does it encourage one to hope for a cheap and easy victory?—C. G. G.



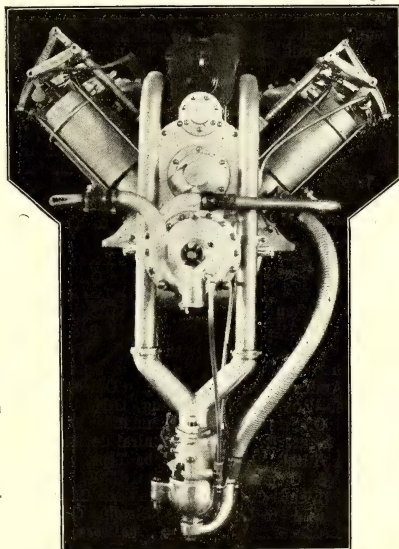
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From the "London Gazette," August 10th, 1915.

ADMIRALTY, AUGUST 7TH.

ROYAL NAVAL AIR SERVICE.—Proby. Flight Sub-Lieuts. confirmed in rank of Flight Sub-Lieut.: K. Souray. December 28th. F. J. E. Feeny. February 9th. R. T. H. Duff. March 15th. J. Forgan-Potts. March 18th. J. P. Coleman. March 19th. M. A. Simpson. April 7th. E. J. P. Burling, C. T. MacLaren, C. D. Morrison. April 16th. J. A. Goodwin, G. G. Hodge. May 2nd. C. C. R. Edwards. May 17th. T. E. Viney. May 20th. J. F. Roche. May 24th. E. Cadbury. May 31st. W. B. Threlfall. June 7th.

Proby. Flight Sub-Lieuts. for temp. service confirmed in rank of Flight Sub-Lieuts. for temp. service: J. T. Bone. March 21st. A. H. Chandler. April 30th. B. C. Bell. May 2nd. H. S. Neville. May 25th.

WAR OFFICE, AUGUST 10TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—Flying Officers—July 20th: Capt. J. A. Liddell, 3rd (Res.) A. and S.H., and seconded, Sec. Lieut. J. V. McEwen, S.R. Sec. Lieut. D. A. Glen, Manchr., and seconded. July 24th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: J. L. Williams, W. J. McConnochie, D. A. L. Davidson, H. P. S. Clogstoun, A. FitzR. P. H. Somerset-Leeke, J. G. McEwen, W. G. B. Williams.

To be Sec. Lieuts. (on prob.): R. F. S. Morton. July 24th. J. A. Crook. July 26th. H. Lee. August 3rd.

* * *

From the "London Gazette," August 11th, 1915.

WAR OFFICE, AUGUST 11TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—Flying Officers—July 13th: Temp. Lieut. E. W. Powell, Sec. Lieut. R. Balcombe Brown, R.F.A., S.R., Sec. Lieut. A. FitzR. P. H. Somerset-Leeke, S.R., Sec. Lieut. H. P. S. Clogstoun, S.R. July 29th. July 31st: Temp. Sec. Lieut. C. H. Kelway-Bamber, 14th (Res.), R.F., and transfd. to Gen. List; Sec. Lieut. W. G. B. Williams, S.R.

* * *

From the "London Gazette," August 12th, 1915.

WAR OFFICE, AUGUST 12TH.

REGULAR FORCES.—MEMORANDA: To be Temp. Sec. Lieuts. for service with Royal Flying Corps. July 17th: Sgt. C. Seedhouse, from Motor Cycle Sec., R.E.; Pte. G. A. F. Layton, from A.S.C.; Pte. R. P. Turner, from A.S.C.

* * *

From the "London Gazette," August 13th, 1915.

WAR OFFICE, AUGUST 13TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—Flight Com.—Lieut. B. C. Hucks, S.R., from flying officer, and to be Temp. Capt. whilst so employed. July 30th.

Flying Officers—July 23rd: Sec. Lieut. W. A. Harvey, 4th (T.) Norfolk; Sec. Lieut. W. S. Douglas, R.F.A., S.R.; Lieut. R. J. Tipton, 3rd W. Lancs. Brig., R.F.A., T.F.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. H. S. Coles to be Lieut. August 1st. To be Sec. Lieuts. (on prob.): H. G. Trust. August 4th. August 9th: N. Pellew, C. W. Wilcox.

* * *

From the "London Gazette," August 14th, 1915.

WAR OFFICE, AUGUST 14TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—Appointment made: G.

Livingston, 3rd (City of London) Batt. London Regt. (Royal Fusiliers), T.F.: July 16th, 1915.

INSPECTION STAFF.—Temporary appointment made: Assist. Inspector—Maj. Alexander E. King, R.A., and to be seconded: August 3rd, 1915.

* * *

From the "London Gazette," August 16th, 1915.

WAR OFFICE, AUGUST 16TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: E. W. J. Payne, F. A. G. Noel, F. Tedman, J. G. Western, D. A. C. Symington, C. E. Wardle, W. D. S. Sanday.

To be Sec. Lieuts. (on prob.): July 22nd: G. H. McLachlin, D. Joy, C. I. Van Nostrand. July 29th: L. E. M. Hayes, F. J. H. Thayne.

* * *

From the "London Gazette," August 16th, 1915.

Vice-Admiral de Robeck, Commanding the Eastern Mediterranean Fleet, has forwarded to the Admiralty a despatch, published in the "London Gazette" of August 16th, reporting the landing of the Army on the Gallipoli Peninsula on April 25th-26th.

In connection with this the following awards have also been made to men of the R.N.A.S.:

To receive the *Conspicuous Gallantry Medal*.

Petty Officer Mechanic John Hepburn Russell, R.N. Air Service O.N. F.839.

Petty Officer Mechanic Geoffrey Charlton Paine Rummig, R.N. Air Service O.N. F.813.

Petty Officer John Hepburn Russell, O.N. F.839, of the Royal Naval Air Service, was wounded in gallantly going to Commander Unwin's assistance.

Petty Officer Mechanic Geoffrey Charlton Paine Rummig, O.N. F.813, Royal Naval Air Service, assisted Commander Unwin in rescuing wounded men.

Admiral de Robeck reports that the first landing, north of Gaba Tepe, was carried out under the orders of Rear-Admiral C. F. Thursby, C.M.G. His squadron included the Seaplane Carrier "Ark Royal."

The following Officers are Commended for service in Action between February 19th and April 24th:—

Flight-Lieutenant (now Flight-Commander) Geoffrey Rhodes Bromet.

Flight-Lieutenant (now Flight-Commander) Ronald Hargrave Kershaw.

NAVAL.

The following appointment was notified at the Admiralty on August 10th:—

ROYAL NAVAL AIR SERVICE.—Mr. F. Bass Sutton, entered as warrant officer, sec. grade, for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 9th.

* * *

The following appointments were notified at the Admiralty on August 11th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut. H. E. Taylor, R.N.V.R., promoted temp. lieut.-com., R.N.V.R., to date August 6th.

Temp. Sub-Lieut. (R.N.V.R.) C. G. Phillips and J. C. Burlison promoted temp. lieuts., R.N.V.R., to date August 7th.

Warrant Officer (Temp.) R. J. McG. Hurst granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," for inspectional duties in R.N.A.S. to date August 10th.

Chief Petty Officers (R.N.V.R.)—G. Crawley, M. V. McGrath, A. G. Tidd, and G. C. Daw granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for duty with Mobile Section, all to date August 10th.

ROYAL NAVAL VOLUNTEER RESERVE.—The temp. commission and appointment of temp. Sub-Lieut. R. R. Soar, R.N.V.R., terminated August 9th, and entered as prob. flight sub-lieut., for temporary service, and appointed to the "President," additional, for R.N.A.S., to date August 10th.

* * *

The following appointments were notified at the Admiralty on August 12th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut., R.N.V.R., N. C. Blanch entered as prob. flight sub-lieut. for temp. service and appointed to the "President," additional, for R.N.A.S., to date August 6th.

Mr. P. A. Allen entered as warrant officer, sec. grade, for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 11th.

* * *

The following appointments were notified at the Admiralty on August 13th:—

ROYAL NAVAL AIR SERVICE.—Chief Petty Officer W. G. McMinnies and Mr. R. C. M. Smith entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 11th and August 6th respectively.

Mr. C. L. Hook entered as warrant officer sec. grade, for temp. service, and appointed to the "President," additional, for R.N.A.S., to date August 7th.

* * *

The following appointments were notified at the Admiralty on August 14th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as Probationary Flight Sub-Lieutenants for temporary service with the following seniority, and appointed to "President," additional, for R.N.A.S.: W. H. Peberdy, July 21st, and H. C. Irwin, August 13th.

J. H. Abell, granted temporary commission as Lieutenant (R.N.V.R.), with seniority of August 13th, and appointed to "President," additional, for engineering duties with R.N.A.S.

B. O. Warren, granted temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of August 13th, and appointed to "President," additional, for engineering duties, with R.N.A.S.

Chief Petty Officer E. W. Westcomb, entered as Warrant Officer, second grade, with seniority of July 9th, and appointed to "President," additional, R.N.A.S.

* * *

The following appointments were notified at the Admiralty on August 16th:—

ROYAL NAVAL AIR SERVICE.—Com. R. M. Groves graded as Wing Commander, with seniority November 15th, 1914.

The undermentioned have been entered as prob. Flight Sub-Lieuts., for temp. service, and appointed to the "President," additional, for R.N.A.S., all to date August 21st: F. C. C. Calder, I. de B. Daly, W. H. S. Aplin, M. J. G. Day, E. L. Pulling, H. C. Jevons, and N. R. Davenport.

* * *

The Secretary of the Admiralty announced on August 10th the following casualty:—

Reported Missing, now presumed to have Lost his Life.

Flight Lieut. Kenneth F. Watson, R.N.

* * *

The Secretary of the Admiralty announced on August 11th the following casualty:—

SLIGHTLY INJURED.

Reported under date August 9th-10th while landing in the dark, during Air Raid:—

Flight Sub-Lieut. George H. Jackson, R.N.

[It is somewhat curious that the death of Flight Sub-Lieut. Lord, on the same occasion, should not appear in the official casualty list. It is even more curious that the death of the late Flight-Lieut. Barnes, who was killed under precisely similar circumstances after a flight in-

volving great skill, pluck, and endurance, should have appeared at the time under the heading "Accidentally Killed," thus conveying the impression that he did not die on active service. There is a regrettable lack of method and congruity in Admiralty communiqués.—Ed.]

* * *

The Secretary of the Admiralty announced on August 12th the following casualties:—

Reported under date August 10th:—

MISSING.

Flight Lieut. David K. Johnston, R.N.

Previously reported Missing, now reported Prisoners of War.

Flight Sub-Lieut. William A. K. Dalzell, R.N.

Sub-Lieut. C. H. Dolling-Smith, R.N.V.R.

* * *

The Secretary of the Admiralty issued the following announcement on August 13th:—

Two Zeppelins visited the East Coast last night, between 9.30 and 11.45, dropping incendiary and explosive bombs at various places, resulting in the following casualties:—

Killed: 4 men, 2 women.

Injured: 3 men, 11 women, 9 children.

All civilians.

Fourteen houses were seriously damaged.

The Zeppelins were engaged at some points, but succeeded in getting away from our aircraft patrols.

One of the Zeppelins was probably damaged by the mobile anti-aircraft section.

This makes the sixteenth raid by enemy aircraft during the war. The total casualties to date are 29 men, 32 women, and 15 children killed; and 94 men, 53 women, and 28 children injured.

* * *

The Secretary of the Admiralty announced the following casualty:—

MISSING.

Under date August 12th:—Flight Lieut. John M. D'Arcy Levy, R.N.

* * *

The Press reports that Mrs. Albert Lord, of Felton, Northumberland, mother of Flight Sub-Lieutenant R. Lord, who was killed during the German air raid on the East Coast on the night of August 9th-10th, has received the following telegram:—

"The King and Queen deeply regret the loss you and the Navy have sustained by the death of your son in the service of his country. Their Majesties truly sympathise with you in your sorrow."

At the inquest on August 11th official expression was given of the regret of the Admiralty, the Royal Navy, and the Royal Naval Air Service at the death of the gallant officer.

[It would be interesting to know on what principle the King is prompted to send condolences, or whether the parents of all deceased officers receive such letters, and only certain parents choose to give publicity to them. Where all die for their country it seems difficult—if nothing else—to make distinctions.

It is also curious that inquests should be held on officers who have died on active service.—Ed.]

* * *

The following appeared in the Births columns of August 12th:—

NICHOLL.—On August 11th, at 2, Cavendish Road, St. John's Wood, the wife of Flight Lieut. VINCENT NICHOLL, R.N.—a daughter.

* * *

The following appeared in the Births columns of August 16th:—

USBORNE.—On August 13th, at 21, Clareville Grove, S.W., the wife of Wing Commander N. F. USBORNE, R.N.A.S., of a daughter.

An engagement is announced between Ivor Terence Courtney, Squadron Commander, R.N.A.S., Captain R.M.L.I., younger son of the late William McDougall Courtney, and Emily Lillian, daughter of the late Alfred Campbell Courtney and Mrs. Courtney, Clanage, Bishops Teignton, Devon.

* * *

The marriage of Flight Commander Edmund Peirse, D.S.O., R.N., and Miss Joyce Ledgerd, will take place, very quietly, at St. Peter's, Thorne, to-day (Aug. 18th), at 12 noon. Owing to the war there will be no reception afterwards.

* * *

The following passages from the diary of an officer in the Dardanelles—published in the "Evening News," is instructive in spots:—

APRIL 1ST.

I was taken for a flight this morning. Yeni Shen is pretty badly smashed. Sedd el Bahr forts is also badly damaged. Kum Kali looked very dilapidated, but the barracks in the centre do not appear to have suffered much, if any, damage. Three or four Turkish ships were visible in the Narrows, the roads, however, were deserted, and no sign of life was apparent.

On returning, a beautiful sight presented itself. Mount Athos was clearly discernible a hundred and twenty miles away, and Mudros and the Bay of Lemnos, although forty miles distant, looked only five or six miles away. The sea seemed to be full of tiny islands, and the ships below like toy ships of tin floating in a basin. There was plenty of shipping, and numbers of torpedo-boat-destroyers were crawling about.

I saw one of our airmen dropping bombs on a Turkish battery on the Gallipoli side.

APRIL 23RD.

Commander Nasmyth, of the *Err*, was taken for a flight this afternoon, as he is going up the Dardanelles early next week.

APRIL 25TH.

One of our airmen let go a bomb, which failed to drop and hung on his machine. He had to get out of his seat and climb down to the "skid" in order to kick it free. He was five thousand feet up at the time.

* * *

Experienced fitters, with special knowledge of internal combustion engines, are required immediately for the Royal Naval Air Service. The pay is from 4s. a day, and all found. Applications should be made to the R.N.A.S. Recruiting Office, Brookgreen Road, Hammersmith, W. Men engaged on Government work need not apply.

Unskilled men of good physique and character are also required for the Kite Balloon Sections. This is about the quickest way of getting to see the war, and the work is peculiarly interesting. The fact that no particular effort has been made hitherto to accelerate enlistment in the Kite Balloons is responsible for there being vacancies now, and as they are likely to be filled up rapidly one recommends would-be applicants to hurry.

MILITARY.

The following casualty in the Expeditionary Force was reported on August 10th under date August 4th:—

WOUNDED.

Allen, Lieut. G., Connaught Rangers, attached Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on August 11th under date August 5th:—

Officially reported Missing, and unofficially reported

Died of Wounds.

Parker, Sec. Lieut. J., King's Own (Royal Lancaster Regiment), attd. Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force

was reported on August 12th from the base under date July 28th:—

MISSING.

ROYAL FLYING CORPS.—Judge, 494 Cpl. V.

[The assumption is that Corporal Judge was passenger with an officer notified as missing on the above date.—Ed.]

* * *

The following casualties in the Expeditionary Force were reported on August 16th, under date August 10th:—

WOUNDED.

Ambler, Lieut. M. J., 14th Hussars, attached Royal Flying Corps.

MISSING.

Pike, Capt. R. M., Royal Flying Corps.

* * *

The "Court Circular" of August 12th announced that Second Lieutenant O. D. Filley, Royal Flying Corps, had the honour of being received by the King at Buckingham Palace on that day, when his Majesty decorated him with the Military Cross.

[Mr. Filley was captain of the Harvard boat which performed well at Henley some few years ago.—Ed.]

* * *

The following appeared in the wedding announcements on August 11th:—

CHERRY—DILLON.—On August 9th, at Christ Church, Folkestone, by the Rev. Canon Gardiner, Robert Graeme Cherry, Capt. Royal Field Artillery, and Royal Flying Corps, son of Col. H. A. Cherry, of The Heath, Upton-on-Severn, to Léonie Constance, daughter of Lieut.-Col. R. H. Dillon, late 1st Batt. Sherwood Foresters, and granddaughter of the late Major T. Dillon, 2nd Queen's Regt.

* * *

The following appeared in the wedding announcements on August 16th:—

GARNETT—BRADLEY: On August 14th, at Hampstead Parish Church, Lieut. W. H. Stuart Garnett, Royal Flying Corps, to Sybil Maud, daughter of Mr. Spencer Bradley, of Daracq Lodge, Streetwork.

Lieut. Stuart Garnett, who commanded a mine-sweeper in the North Sea during the first year of the war, recently left the R.N.V.R. in order to become an aviator.

* * *

The marriage of Melville Richard Howell Agnew Allen, Second Lieutenant, Royal Flying Corps, only son of Mr. and Mrs. Richard William Allen, of Blunham, Bedfordshire, and Dorothy Drina, elder daughter of Major John Stanley Lightfoot, late the Bedfordshire Regiment, and Mrs. Lightfoot, of Anchoret, Bedford, will take place quietly this month.

* * *

Allowing for a certain amount of journalese, the following descriptive matter from the "Daily Chronicle" is worthy of note:—

Our superior airmanship and power to manoeuvre have somewhat more than offset the superior armament and size of the enemy machines in the majority of air combats.

Speed and climbing power are the cardinal considerations. We must not let the enemy remedy his deficiencies in these respects to our disadvantage.

These are the conclusions of an observer attached to the Royal Flying Corps from an air scout's fight with a German great battle-plane, described in the following article:—

An hour after daybreak I was following the enemy's lines of communication for thirty miles behind his trenches. For half an hour we ploughed and laboured back, making varying progress. As we neared the lines the "Archies" (anti-aircraft guns) made more deliberate and better practice, but we managed to out-maneuvre them. About 2,000 ft. below us, on the right, was a bank of ground mist ascending rapidly.

I examined this carefully through glasses, and suddenly caught sight of a machine just within the outer fringe of the bank. He was ascending rapidly in a steep upward spiral. He was travelling against the wind at a pace which seemed to be a trifle faster than ours. As he got clear of the cloud bank he bent over again into a spiral and his crosses were plainly visible. His shape was now discernible, and we saw that he was the "great battle-plane" of the German communiqués.

The two propellers flashed sombrely in the sunlight as they lifted the big machine towards us. In the curious, bending wings and the double fuselage there was the effect of a grinning monster, exulting in his assured prey.

He was soon within about half a mile of us and about 800 ft. down. As I watched him at that height I saw his machine-guns begin to spit. In estimating tactics in air combat it is, of course, the first consideration to determine the enemy's "blind side." The points of vulnerability in order of importance may be said to be the propeller, the engine, the pilot, and the control. In fighting a tractor (its propeller in front) one must keep in front and above. In fighting a pusher "gun-bus" one must avoid the front and keep behind at all costs, and rather below than above. On this occasion the enemy machine was a duplicate tractor—that is, it had two propellers, both in front. Obviously our tactics were to keep above the front. Beyond strenuous attempts to get level with us, the enemy machine had given no indication of his line of action. Indeed, he had fallen back about a quarter of a mile and had ceased firing. He was determined to get above us.

As our machine was a tractor, we had to engage him before he had done this. So we swung round and bore down wind straight for him, opening fire with machine-guns at the same time. The Hun replied with a fusillade from guns mounted both fore and aft; but his practice was bad, and only a stray shot found our planes. As we came down upon him at a great pace he shoved his nose up at a tremendous angle and almost "stalled" his machine in an endeavour to cross above us. But the big "battle-plane" did not respond to the controls, and instead of climbing, bent over and slid away for fully two hundred yards before the pilot got her out of the "tail slip."

My pilot stood our machine on her left wing tip and swung round in a slow vertical bank, which enabled me to sweep the enemy machine with my gun. As we were due in front of him, his fire was restricted. It was obvious, also, that the pilot's nerve had suffered from the "tail slip," because when he came out of it he dived away until he was out of our range. We followed, keeping well in front and slightly above.

By suddenly "dipping his elevator" my pilot brought the machine within point-blank range. The Hun did not reply. He was waiting until he turned over on an outward bank just ahead of us, when he would pour a broadside into us. We saw the ponderous right wing go down and the fuselages reversed position. But we had the inner circle and swept round in front of him before he was half-way through his bank. The moral advantage of having out-maneuvred him seemed to have disconcerted the Hun, for he gave up the bank, put his nose down, and went down at a very steep angle.

He may have been hit, but to all appearances his engine and propellers were still working. As soon as we made certain that he meant to retreat for good we resumed our reconnaissance course. As he got clear of our zone he threw out a smoke ball and the anti-aircraft guns recommenced their practice.

* * *

A private in the Suffolk Regiment writing home says: "We were in the trenches, and it was getting well towards evening, when several German aeroplanes had been

continually flying around our trenches trying to take observations. One of them was seen to drop several little starlights to signal their artillery that they had seen troops or something on the move. Our fellows seemed very angry because we could not see any of ours about after them or firing to clear them away.

"But the unexpected was in store. The German that dropped the starlights was carrying out a risky job in planing down very low to make the observations more plain for them, when all of a sudden we saw a little dark speck coming down from a cloud.

"We all wondered what it could be; as it came quicker we saw that it was an aeroplane, and, we believed, one of ours. It came down like a flash of lightning right on top of the enemy, giving them a dog's chance, and, to our delight, dropped a petrol bomb right into it. All of a sudden it blazed up and pitched down nose first about 400 feet. Then somehow the Germans seemed to control it a bit; but gradually it came to earth in a great wood within our lines. One kept wondering what happened to them. Later we heard from the man at the telephone that one was burnt to death, and the other just managed to get out of the machine badly burnt. This is the third one I have seen brought down."

FRANCE.

The communiqué of August 10th says:—

Four of our aircraft which took part in the bombardment of Saarebruck have not returned to our lines. One of them is reported to have landed in Switzerland, near Payere, in the canton of Vaud.

* * *

The Ministry of Marine issued the following statement in Paris on August 11th:—

French hydro-aeroplanes from the Maritime Aviation centre at Dunkirk yesterday dropped twelve incendiary bombs of 4.8 in. and six of 3.6 in. on a Zeppelin which was returning in a crippled condition to Ostend.

They further carried out the bombardment by night of the port of Ostend, on which they dropped forty-nine bombs of 3.6 in.

It is understood that a British aeroplane cast the first bomb at the Zeppelin.

* * *

The Paris communiqué of August 15th says:—

A group of 19 aeroplanes bombarded a German park and dépôt in the valley of the Spada (Meuse-St. Mihiel region); 108 shells were dropped on the objectives aimed at.

All our machines returned without incident.

* * *

It was reported from Dijon on August 13th that a biplane which was landing near the cemetery at Montbard came in collision with a tree and the pilot and a lieutenant were killed.

* * *

It was reported from Paris on Saturday that on Wednesday there were several aerial duels between French and German aeroplanes. A French machine, flying over Colmar, attacked an Aviatik and compelled it to descend. The same day French aerial patrols attacked and damaged two German aeroplanes.

* * *

According to the "Matin," Carpentier, the boxer, recently had an accident while flying in an aeroplane. Owing to the motor stopping the machine landed on very rough ground in the Vosges. The observer escaped unhurt, but Carpentier broke his ankle and split an eyebrow.

* * *

The death was announced in Paris, on August 15th, of the young artist, Daniel De Losques, whose theatrical drawings were familiar to all readers of the "Figaro." He was serving in the French Flying Corps, and met his death in a mission he was sent to perform over the German lines.

The news was brought to the French lines by a German aeroplane, which dropped the following message:—

"De Losques and his pilot fought bravely.

"They are buried at Harbouey, near Blamont. Their papers will be sent via Switzerland."

GERMANY.

The communiqué of August 10th says:—

South of the border of the Hessen Wood, west of Verdun, we shot down a French captive balloon.

Between Billingen and Rheinweiler, south of Mühlheim (Baden) a French aeroplane was forced to land by the fire of our anti-aircraft guns. A pilot observer was captured.

Near Pfirt our fire forced an enemy airman to make his way into Swiss territory.

* * *

The communiqué of August 11th says:—

East of Novo Georgievsk we captured the fort of Benjaminow, which the Russians evacuated. The fortresses of Novo Georgievsk and Brest-Litovsk were bombarded from our airships.

* * *

The communiqué of August 12th, says:—

One of our airships bombarded the railway station at Bielostok. A great explosion was observed.

RUSSIA.

It was reported from Petrograd on August 10th that a Zeppelin dropped 12 shells and 5 incendiary bombs on Bielostok. A woman was killed and a child wounded; little damage was done.

Zeppelins also flew over Kovel railway station and dropped a few bombs. There was no loss of life, and traffic was not interrupted.

* * *

A telegram from Riga states that a Zeppelin appeared for the first time over the fortress of Ust-Dvinsk (12 miles north of Riga), on August 11th, flying round the ramparts. German aeroplanes are visiting Riga almost daily.

* * *

A message from Petrograd, dated August 12th, says that a passenger train arrived at Kieff from Siedlce, having been struck by bombs from a German aeroplane, which pursued the train. One second class and one third class carriage were partially wrecked, and several passengers were seriously wounded.

* * *

It is reported from Petrograd on August 14th that the first enemy aeroplane has appeared over Brest Litovsk, and was driven off by the Russian guns.

A despatch from Bielostok states that German aviators are paying a good deal of attention to Malkin, which is on the main line from Warsaw to Petrograd. Not a day passes without a visit from Taubes or Zeppelins, which kill and maim numbers of civilians.

ITALY.

A News Agency message from Paris says:—

A telegram from Pola says that since the beginning of the war an Italian aviator has succeeded in throwing four or six bombs nightly on the Austrian port of Pola. On each occasion he has returned safely. He has in this way bombarded the Arsenal, the petroleum and benzine depots, the ships and the forts. The damage he has caused is estimated at several million francs.

[It seems more likely that the nocturnal machine is a "canard" than a "taube" or a "sparrow," or any other of the ornithological names tacked on to aircraft.—Ed.]

* * *

Fortunately shooting down dirigibles is not as easy as it appears to be. Obviously, too, only the trained anti-air-

craft people ought to be permitted to fire at things in the air. Which "banal" remarks are called forth by my having just read how an Italian airship was recently fired at from terra firma near Genova, luckily without being affected thereby. Inquiry into the genuineness of the marksmen's stupidity has no doubt been made, but what is to prevent an uninterested alien in England from bringing down one of our aircraft by mistake? The difficulty of doing it perhaps?

Another useful donation of 10,000 francs, or rather lire, has been made to the I.Ae.C. by a farseeing member of the Society of Italian Aeronauts. This money is to help on the work of bringing out the flying-man's map of Italy. Probably a good deal of what was done in the way of treating gasometer tops and other signposts will have had to be undone; hence help for the funds allocated to the map-making undertaking will come very welcome now.

Sorrow at the loss of P.4 is somewhat tempered by hearing from Nav. Lieuts. Brivonesi and Valerio that though prisoners they are unharmed and that such too is the case with other members of her crew. The first name used to be frequently seen in these columns when airships were scoffed at, and its owner must thus be put down as a serious loss to our Allies, as of course are all members of the vessel's "hands." Necessarily limited in number, dirigible pilots are not easily acquired, even in peace time.

A well known M.P. who has been in the war zone—I cannot say in what capacity—chronicles in stately prose his experiences of an aerial attack and some other barbarities, as he considers them.

One could glean from his account of it all that there is a shortage of metal *chez nos ennemis*. For the arrows (darts) now being disseminated on that front, unlike those formerly rained on the allied forces are made with wooden shafts somewhat played out (?) and, of course, the usual steel tips. Even so they get through tiles into garrets, and though they simply curl up on a stone pavement, manage to get right through an animal's body and to bury themselves to about the depth that a plough will get to below the surface of the ground.

The honourable member tells of a new and original line of frightfulness met with by the invading army in the course of their thirsty progress. He learnt of it from Capt. —, who is in command at — Port. In the raids on confectionery shops delicious and tasty looking lollipops in silver paper were pounced upon as thirst quenchers. But "when the pie was opened, etc." . . . One man got his fingers blown off, and all sweets are now taboo.—T. S. HARVEY.

AUSTRIA.

The communiqué of August 16th says:—

One of our seaplanes yesterday afternoon bombarded four coast forts at Venice. All the bombs with the exception of one exploded within the fortifications.

Of five hostile airmen who ascended to pursue our men two were forced to land by machine-gun fire and two abandoned the pursuit after some time, while the fifth airman followed our machine close to the Istrian coast, where he was obliged to turn back without having been successful.

Our seaplane returned safely, in spite of the heavy fire of hostile war vessels and forts.

TURKEY.

The official communiqué of August 14th says:—

Hostile aircraft have recently been flying constantly over the Isonzo region, but they have always been driven off by the effective fire of our anti-aircraft batteries.

* * *

The following official communiqué was issued from Constantinople on August 15th:—

Enemy aviators dropped bombs on Ari Burnu during the evening of Thursday and the morning of Friday.

Nine soldiers were wounded. Nothing of importance occurred on the other fronts.

* * *

The "Daily News" special correspondent, Mr. Ernest A. Hill, writing from Athens, August 14th, says:—

An Allied fleet of aeroplanes flew over Constantinople and threw bombs on Galata (the suburb on the north side of the Golden Horn). Houses were destroyed, and there were heavy casualties.

[Assuming that the Allied aviators started from depot ships in the Gulf of Saros, they covered a distance of well over 100 miles each way.—Ed.]

BULGARIA.

It was reported from Dedeagatch on August 12th:—

Lieuts. Jinziforoff and Kalinoff have been killed while flying over Sofia, owing to an explosion of the petrol tank. They are the first Bulgarians to be victims of an aviation accident. The wrecked aeroplane fell within a few yards of a cemetery.

SERVIA.

A "Daily Chronicle" message from Athens of August 10th says that some little time ago, Serbian aviators located two Austrian army corps some distance from the Serbian frontier, and the presence of that force, reinforced shortly afterwards by a strong body of Bavarian troops, caused the Serbian military authorities some anxiety. Eventually, however, the entire force was withdrawn.

[Nevertheless, keep your eye on Serbia, which is at the moment the key to the European situation, diplomatically especially.—Ed.]

SPAIN.

It was reported from Madrid on August 10th that while the military airship "Alfonso XIII" was being inflated at Guadalajara an explosion occurred, destroying the airship and injuring an officer and eleven soldiers, five of the latter severely.

U. S. A.

The "Daily Express" correspondent at New York wrote on July 30th:—

One thousand American aeroplanes, purchased with American money and offered by American aviators, are to be offered by an American organisation to France for the use of the French army in the present war, according to a cable despatch from the Paris correspondent of the New York "World."

The correspondent reports that £200,000 has already been raised by Americans for the project, which aims to create an adequate aerial reserve for the American army, training American aviators in the practical, perilous school that the present war affords.

He adds that in the name of the former United States Ambassador to France, 10,000 circulars are to be issued to the graduates of Yale, Harvard, and Princeton inviting them on patriotic grounds to aid in strengthening the defences of their country.

They will be asked to join the French aviation corps for the duration of the war, after which their military experience will qualify them to become reserve aviators in the United States. They will be formed into a special corps in France, under their own officers, and will receive an additional £10 a month over and above the regular French flying man's pay.

[It is not explained how under French military law an American officer is to command in the field, nor how under American law the promoters of the scheme are to avoid infringing neutrality. Nevertheless, the proposed corps is actually being formed.—Ed.]

* * *

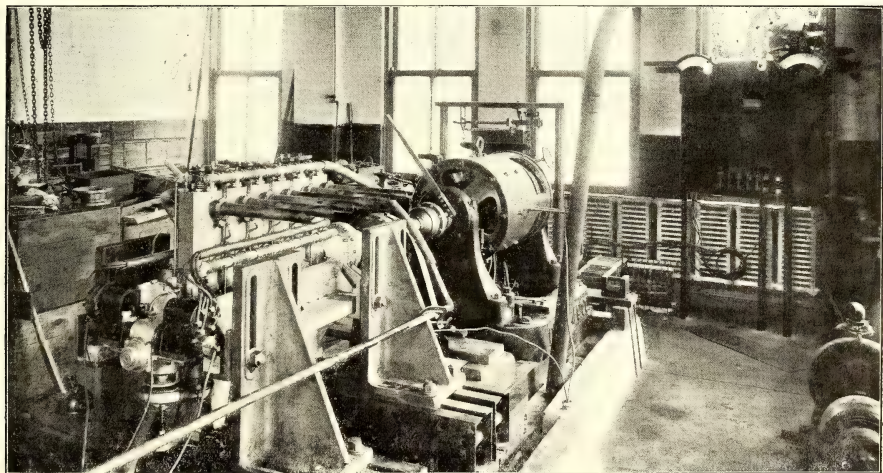
The New York correspondent of the "Morning Post" wiring on August 15th says that while protesting against shipment of munitions to the Allies, the German Government is now engaged in buying munitions plant in the States which it secretly controls. The New York "World" promises, in a future article, to give full details of these transactions, the name of the plants, and their location. It is said that an agent disclosed to Heinrich Albert, the chief financial agent of the German Government, a scheme for acquiring control of the Wright Airship Company, so as to prevent the exportation of flying machines to the Allies.

* * *

An American contemporary heads a paragraph, "Flies 115 miles for Breakfast." Surely there must be some famine in the land.

* * *

It is reported that Capt. William A. Mattery, formerly a Chicago airship and balloon pilot, was killed in an aeroplane accident while on duty with General Villa's army in Mexico.



The 100-h.p. Aeromarine Motor on the Test Bench in the Laboratory of the Automobile Club of America.

CANADA.

A message from Montreal on August 6th says that with the continued spread of the machine-gun fever over Canada, it has been suggested by Colonel Wilson, commanding the Montreal district, that some of these subscriptions should be pooled for the purchase of aeroplanes, which are just as necessary for war as machine-guns, while it is hard to secure a proper supply. His suggestion has met with considerable favour, and already plans are under way for the purchase of several aeroplanes in different parts of Canada.

* * *

A message dated Montreal, July 10th, states that forty acres of land and a row of hangars had been granted by Montreal East to the Montreal School of Flying for three years. In addition, the Town Council had promised to build a landing stage 100 feet long. The school was to be opened on August 2nd and 100 applications had already been received from prospective students. It is expected that those qualifying will offer their services for overseas services in the British Flying Corps.

* * *

It was reported from Montreal on August 11th that Mr. Robert Hampson has given a 100-h.p. Gnome-Vickers biplane for the Canadian Overseas Aircraft Squadron.

RHODESIA.

A telegram has been received from Salisbury, Southern Rhodesia, asking the British South Africa Company to pay to the Imperial Government the sum of £1,500 deposited with the Treasury there by Colonel Raleigh Grey to purchase a 70-horse-power aeroplane as a gift from the people of Rhodesia to the Royal Flying Corps, and to form a unit of the Imperial Aircraft Flotilla. The aeroplane, it is requested, should carry the name "Rhodesia No. 1."

Northern Rhodesia, through the Administrator, also intimates that certain Angoni chiefs in the Fort Jameson district have voluntarily subscribed £32 1s. as an expression of loyalty to the King, the money to be utilised as a contribution towards the cost of an aeroplane for the British Army.

THE INVASIONS OF ENGLAND.

The Zeppelin raid on the night of August 9th-10th makes the fifteenth raid since the outbreak of war. On June 24th, Mr. Brace, Parliamentary Under Secretary to the Home Office, stated that there had been up to that time fourteen attacks by hostile aircraft on this country. The total casualties in those raids being:—Killed, 56, of whom 24 were men (all of them civilians), 21 women, and 11 children. Wounded, so far as could be ascertained, 138, of whom 86 were men, 35 women, and 17 children.

The total casualties through air raids to Aug. 10th would therefore appear to be 25 men, 30 women, and 15 children killed; and 91 men, 42 women, and 19 children injured.

* * *

The correspondent of the "Morning Post" at Amsterdam reported on August 10th that during the past few days there had been increased activity among German aircraft north of Holland. On the 9th five Zeppelins, accompanied by a flotilla of German destroyers, all going westward, were sighted in the Bight of Heligoland. The same afternoon five Zeppelins—probably the same craft—were seen off Vlieland going in a north-westerly direction.

Early on the morning of the 10th German seaplanes were sighted north of Schiermonnikoog going westward, and four Zeppelins passed north of the island of Ameland going eastward, evidently the five which went West minus the one destroyed off Ostend.

* * *

The following is a list of raids up to date:—

December 5th.—Dover.

December 25th.—Dover and the mouth of the Thames.

Jan. 19th.—Yarmouth, Sheringham and King's Lynn.

Feb. 21st.—Colchester, Coggeshall and Braintree.

April 14th.—Blyth and Tyneside.

April 15th.—Maldon and Lowestoft.

April 16th.—Farnham.

April 29th.—Ipswich and Bury St. Edmund's.

May 10th.—Southend, Westcliff and Leigh.

May 17th.—Ramsgate.

May 27th.—Southend and Westcliff.

May 31st.—Outlying districts of London.

June 4th.—East and south-east coasts.

June 6th.—East coast.

June 15th.—North-east coast.

August 9th.—East coast

August 12th.—East coast.

GERMAN AIRSHIP CASUALTIES.

The following list gives approximately the casualties among Zeppelins during the war.

The first was in August, when French artillery brought down a Zeppelin at Badonvillers. Then in October a Zeppelin shed at Dusseldorf with an airship inside was destroyed by Flight Lieut. Marx, R.N.

On November 22nd a flight under Squadron-Commander Briggs, R.N. (who was taken prisoner), damaged the Zeppelin works on Lake Constance at Friedrichshafen and caused delay equivalent to the destruction of a new ship.

On December 21st Squadron Commander Davies dropped 12 bombs on a shed at Brussels containing a Parseval airship.

Two Zeppelins, L3 and L4, were lost in February off the coast of Denmark in a snowstorm.

Four others were reported to have been destroyed by bad weather at various places. One was wrecked near Maastricht in November, and in March yet another was destroyed in a fierce storm at Cologne. About the same time the L8 was badly damaged near Brussels, and had to be dismantled for repairs. And another was wrecked in Germany.

A Zeppelin that had attacked Ramsgate on May 17th, LZ38, was attacked by eight naval machines from Dunkirk. Flight Com. Bigsworth, R.N., dropped bombs from 200 feet above it. Nevertheless the airship managed to get back to the shed at Evers, where a week later it met its fate, at the hands of Flight Lieuts. Mills and Wilson.

On the same day (June 7th) LZ37 was destroyed in Belgium by Flight Sub-Lieutenant Warneford, V.C.

And finally one was destroyed at Ostend on August 10th.

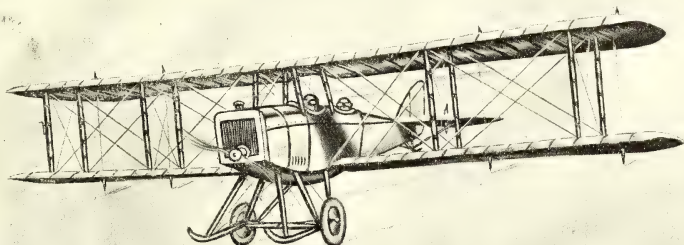
This accounts for twelve Zeppelins lost, without counting any hit by the Russians, or any loss of Parsevals.

"DOG EAT DOG."

The "New York" correspondent of the "Morning Post," wiring on August 6th, says:—"The most ironical thing that has happened in pro-German and anti-British ranks is a suit for £50,000 damages brought by Mr. Ridder, editor of the New York 'Staats Zeitung,' against Mr. Hearst, proprietor of the 'New York American,' who has been no less violent and virulent than Mr. Ridder in arousing sentiment against England. Mr. Hearst charged a manufacturing concern in which Mr. Ridder is interested that they had a contract to make parts of aeroplanes for the Allies. Mr. Ridder claims as a good German-American that this puts him in the light of a hypocrite, and is damaging to his reputation, and only 250,000 of Mr. Hearst's American dollars will repay the injury."

PROGRESS.

It is interesting to learn that the Whitehead Aircraft Co., Ltd., of Richmond, is expanding in satisfactory style and that it is now engaged in turning out complete machines.



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E.B.H. LANDER, 1915.

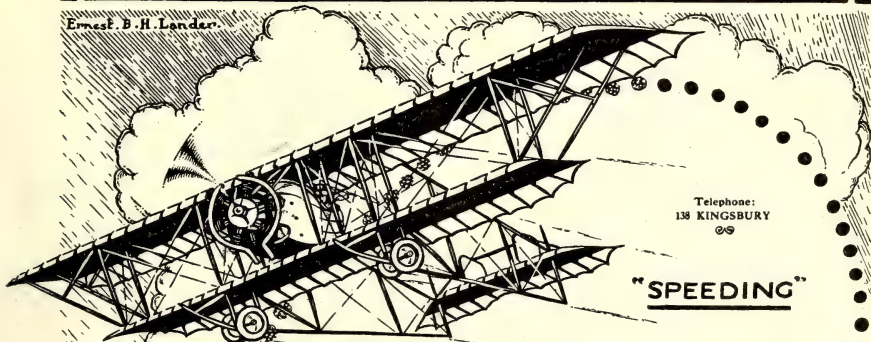
SOME NEW PILOTS.



The majority of the photographs were taken by Mr. F. N. Birkett, Percy Road, Shepherd's Bush, E.W.

LEFT TO RIGHT :—(1) Capt. J. Everidge (Surrey Yeomanry), Certificate No. 1485, Ruffy-Baumann School, Caudron-type biplane; (2) A. D. de Broughton (2nd Lt. 14th Reserve Cavalry), 1292, R.B. Caudron; (3) Raymond Barker (2nd Lt. 12th Northumb. Fusiliers), 1460, Hall School, Caudron-type biplane; (4) H. H. Balfour (2nd Lt. 60th Rifles), 1399, R.B. Caudron; (5) E. H. Pullinger, 1401, London and Provincial School, Caudron type biplane; (6) H. L. Wood, 1439, L. and P. Caudron; (7) L. Minot, 1409, Hall Caudron; (8) E. J. Furlong, 1426, Hall Caudron; (9) T. D. Cole, 1380, R.B. Caudron; (10) P. A. Johnston, 1309, Beatty School, Caudron biplane; (11) E. C. England-Derwin, 1484, R.B. Caudron; (12) S. J. Sibley (passed tests on water-plane at N.A.C. School, Windermere, but under age for certificate.)

Ernest B. H. Lander.



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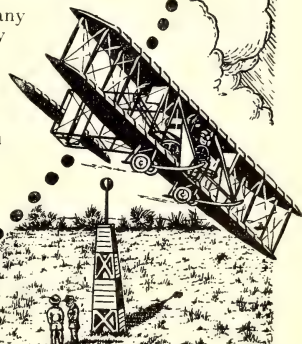
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CHAPTER VIII. FINISHING OFF ARTICLES.

In a factory where the "business" element prevails, it will usually be found that as much attention is paid to this subject as almost anything, because the man of business knows that first-class finish is one of the principles of success, the main principles being (1) a thorough knowledge of the methods of manufacture, (2) a good organisation, and (3) the delivery to date of a well-finished article.

A well-finished article will often cover a multitude of sins, as it were; it is a good advertisement always, and it will help to build up a good reputation.

The finishing of munitions of war may appear to be a minor point for attention, the delivery of the article as required being the most important element; but, on the other hand, it need cost no more and need take no more time to finish an article well than to deliver it in a rough condition.

The process of finishing may comprise polishing, painting, sand-papering, cleaning up or even finishing in a manner not actually called for, the latter particularly in the cases of complete articles. Therefore it is not possible to lay down here any precise routine for the organisation of what may, in some cases, be termed the Finishing Department.

In all cases, however, the passage of articles through such a department can be utilised in compiling certain returns, checking returns from other departments, and generally preparing the articles and the records thereof for the easy handling of the same by the Finished Stores and ultimately the Despatch Department.

The Finishing Department is easily capable of organisation, so as to combine the recording of details for returns as already suggested, but such organisation can necessarily only be laid down in accordance with the general routine of the factory. There may be an Output Book, a Check on Orders Executed Book, an Advice Book for Despatch Departments.

Taking these suggested books in the order mentioned: The Output Book would be a return of all articles, giving full details as to the description, quantity, contract number and name of customer, and date to be finished in respect to all consignments received from the shops during each day. Such a book being written up

Label for Finished Parts.	
Description	.....
For	.....
N ^o Attached	.....
Drawing N ^o	.....
Part N ^o	.....
Job N ^o	.....
The above to be filled in by Progress Dept.	
Inspector's Report	
Date Received	.....
Inspected by	.....
Remarks on Final Inspection	.....
Received in Store by	No.
Work Taken Receipt	
Job N ^o	Part N ^o
Received in stores by	N ^o Off



A Specimen Label for
Finished Parts and
a Specimen
Job Card.

JOB CARD.	
Issued to	Date 191..
For	MT.
Description of Work	
.....	
Job N ^o	Part N ^o
Required (urgently) or [By]]	
Date Returned	191..
Order N ^o	.....
For	.....
REMARKS.	
.....	

in triplicate, a copy can then be supplied to the Factory Offices and the other to the Despatch Department, thus often rendering the factory manager just the information he may want to know without referring to the Progress Sheet of the contract in question, and at the same time keeping him in touch with the daily output of the shop in finished articles. The returns to the Despatch Department provides an advice to them of the goods coming through, and will assist them in their routine.

The Check on Orders Executed Book will primarily contain, in the form of a ledger, details of all orders as received. The Finishing Department can mark off the supplies as and when they pass through, thus providing an up-to-date record of all orders still to be executed or completed in respect of all customers' orders or contracts accepted.

In the Finishing Department can also be kept the Finished Stores—i.e., stores awaiting despatch. A contractor having an order to deliver, say, 500 of an article

will not necessarily find it imperative to make daily deliveries, but may be under contract to deliver 100 per week. These 100 articles will be accumulating in the Finished Stores during each week, and the required quantity can be delivered when complete and ready to the Despatch Department.

There is yet a further use for the Finished Stores. In this department can be kept all such articles commonly used, as, for instance, rivets, screws, pins, washers, etc. Stocks of this nature can be easily arranged, and it will generally be found that economy may be practised by the separate keeping of such requirements rather than in the General or Raw Material Stores.

Those responsible for the deliveries to the Despatch Department should have facilities for making out the correct labels and the advice notes, while the actual packing would be

DISTRIBUTION OF TALLIES												
TALLY NO												
OPERATIONS NOS												
DATE OUT and NO OFF												
TALLY NO												
OPERATIONS NOS												
DATE OUT and NO OFF												
TALLY NO												
OPERATIONS NOS												
DATE OUT and NO OFF												
TALLY NO												
OPERATIONS NOS												
DATE OUT and NO OFF												

A Specimen Chart for the Distribution of Work.

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done by the Despatch Department. The fact that the advice note is made in a different department from that which actually delivers the goods forms a check on the proper charging up of all goods sent out, and then articles which are received back, either rejected or for adjustment, can be similarly dealt with, thus assisting the keeping of correct records of net deliveries.

Having delivered the goods correctly, the work is at an end, the cost is ascertained, and the profit calculated; but without good organisation the cost will probably be misleading, and the ultimate net profit of the factory working will not be encouraging. And in the majority of cases consolation will not be found in comparing the various promised dates of delivery with the actual dates.

Perhaps these cases, as war proceeds, will not be found to be so many. Any way, that is the hope.

FINIS.

AN ESSAY ON AEROPLANES.

(With acknowledgments or apologies to Mr Ashley Sterne, of "London Opinion.")

[The Editor takes no responsibility for his contributor's opinions or statements.]

Since that eventful day last August, when it was decided that everybody should kill everybody else, aeroplanes have no longer been looked upon by the man in the street (or aerodrome) as spectacular instruments for sporting suicides, but as objects of distinct utility. No official communiqué is complete without a reference to someone's aeroplanes raiding someone else's railway station and dropping hints and things on the down-platform ladies' waiting-room.

It is, therefore, not surprising that outside every aerodrome there should be seen daily a long queue of motorcyclists, holding large handfuls of "John Bradburies," and clamouring to be allowed to come in and learn to fly.

As most aviation schools are at present exhibiting a board bearing the words, "Standing-room Only," and as there are not enough machines to go round, or even do straights, it seems my duty to offer a few useful tips which will enable the enthusiast to construct his own aeroplane.

It is first necessary to decide on the style of machine you propose to build. If you have easy access to a timber yard (very easy, that is) you may start upon a large biplane. This style, as illustrated in THE AEROPLANE fashion-plates, has a roof as well as a floor, and is recommended for all sorts of weather, which is what you will probably get. If your timber and cash resources are limited you may start with a monoplane. Your friends will then be able to exclaim, "Isn't it like a bird?"

Having got your planes laid out on the floor of the shed which you hired or borrowed for your work, you cover them with canvas and whitewash or varnish according to taste. A number of wooden struts are now necessary to keep the two planes apart, otherwise the upper one will continually be falling down and getting in the way. A very pretty effect can be obtained by interlacing these struts with picture wire, which makes your machine look more complicated than it really is. A tail should be added, either in front or behind, according to the shape of your shed.

The seating accommodation should now be designed, and fixed amidships, or as near the centre as convenient. If you have friends on the Stage, which is the correct thing for an aviator, two seats will be better than one. These can be procured from Messrs. Keith Prowse and Co., who claim to have the very best.

One or two propellers will be found useful. The advantage of having a second one, in case one falls off, is obvious, and will soon justify the extra expense.

Having now got your aeroplane practically complete,

you will begin to think about an engine. If your experiment so far has been more expensive than you expected, as you thought it would, this is about as far as you will get. In that case you can either advertise the aeroplane in "The Bazaar, Exchange, and Mart," in the hope of acquiring in its place a collection of foreign mice or an album of tame white stamps with pink postmarks; or, with the addition of some more timber round the sides, a thatched roof, and half a gross of best quality earwigs, it can be transformed into an ornamental summer-house.

If, however, you are fortunate enough to secure some sort of an engine, you will proceed to take your aeroplane out onto the open field. This may be done either by taking it to pieces again and removing through the door on the instalment plan, or by demolishing the shed.

By the time you have done this it will begin to rain, and you will have to put it back again. Great care must be taken not to get it wet, as the planes are liable to warp so much out of shape that your machine will be taken for one of enemy design, and may even be attacked by captive balloons.

Having paid the necessary fees, learning to fly will be comparatively easy. You are first taught how to fly from one side of the aerodrome to the other, soaring over the tops of the long grass with one eye on the barograph and the other on the man who is minding your motor-cycle.

If you arrive there safely you will certainly be permitted to fly back. This saves the mechanics a long and weary walk.

After a series of these flights, which are sometimes called "straights," you will be taught to make a right-hand turn in the air. This, in the legal profession, is known as "going on circuit," and if there is no change in the wind while you are aloft it is possible you will return, eventually, to the place from whence you started. At this stage flying becomes really interesting.

The element of uncertainty has now been well introduced, and you never know whether you will land in the middle of the aerodrome or in the middle of next week.

A few more lessons in the performance of figures of eight, and sometimes nine and ten; the descent with engine cut off and cap missing; the vol plane and the vol coloured, and you will be ready to have your photograph taken in front of the hospital verandah.

Having obtained your licence to drive an aeroplane, you will, of course, proceed to join one or other of the Air Services of your country, which, as you have already been informed, needs you.

There are two—the Royal Flying Corps, or military branch, and the Royal Naval Air Service, or Rolls-Royce Brigade. The latter is the Senior Service, the average age of a prob. (or probable) flight sub-lieutenant being about 19 years and 4 months. The Royal Flying Corps is, however, frequently preferred, the uniform buttoning better across the chest.

The disadvantage of the military section is that you may find yourself partly under the control of civilian officials, who possess most of the Biblical attributes of the lilies of the field without much of their personal charm. This will possibly arouse a feeling of discontent and spoil your joy-rides.

In that case you can, with influence, which means a titled Aunt who knows Someone on the Staff, get transferred into the R.N.A.S., though this is not advised if you are fond of the seaside. The laundry expenses are also much greater, but, on the other hand, there is a much better car service. There is also the chance of rising to become a flight-commander, which, at any rate, sounds good.

If you are not successful in this you may, as a last resort, get your own back by joining the Anti-Aircraft Corps and becoming an anti-flight-commander.—D. W. T.

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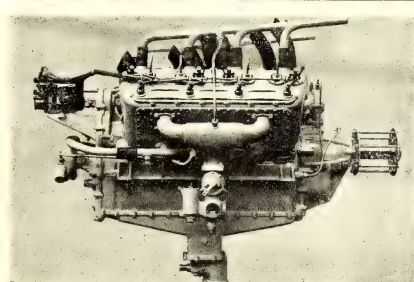
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A New American Motor.

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The firm is known as the Aeromarine Plane & Motor Company. Its latest 100-b.h.p. aeronautical motor, which has a geared-down propeller shaft, appears to be a singularly neat job, as the illustrations show.

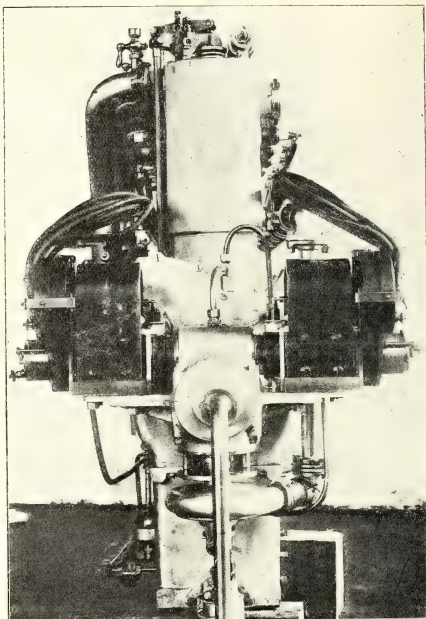
The makers state that enormous sums of money have been expended in obtaining the equipment necessary to the production of component parts that are absolutely interchangeable, at the same time obtaining a speed of manufacture permitting the marketing of this motor at its present attractive price.

The motor follows closely well-tried European design and practice, viz., vertical cylinders, 4 5/16-inch bore, of vanadium iron, machined all over inside and outside, on which are electrically deposited copper water jackets to a thickness which has been found substantial and resilient. In the process of deposit, the jacket becomes a practically integral part of the cylinder, ensuring against water leaks at any of the variable temperatures at which the motor may be called upon to perform.

Great care has been exercised in the development of the flanged base of these cylinders in order to retain the initial strength to withstand the working stresses, at the same time permitting uniform expansion of the base of the cylinder walls and the skirts of the pistons.

The valves are of concentric type, 2 3/8-inch diameter, manufactured from special material and of "Aeromarine" construction, and are arranged in the cylinder heads over the centre of the pistons. Together with an absolutely first-class arrangement of fully adjustable rocker arms and push rods, they represent the outcome of patient thought and work combined with an intimate knowledge of the problems to be dealt with.

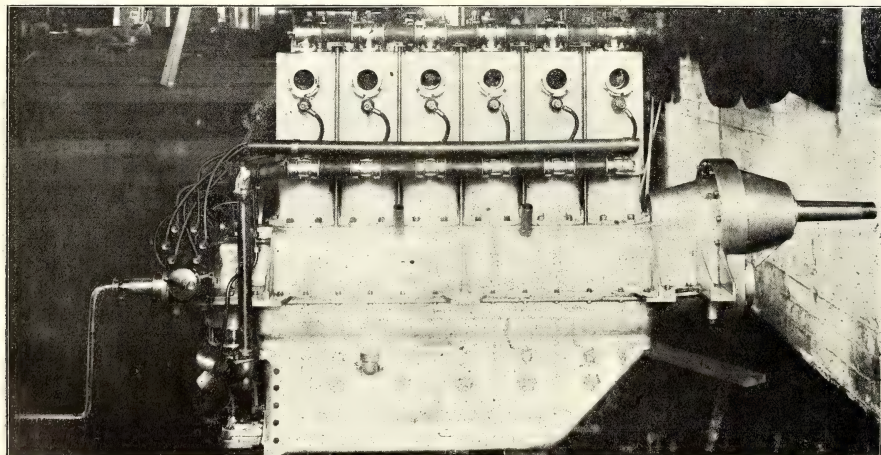
The hollow cam-shaft (hollow for the purpose hereinafter to be described) of high grade steel, heat treated, and ground true, has seven bearings with sp'it bronze bushing,



End View of the Aeromarine Engine.

3/4 inch diameter, 2 3/8 inches long. The bearing surfaces are babbitted. All cams are hardened and ground.

The connecting rods, of I-beam section, are machined from solid hand forgings of Carpenter special nickel steel. The merit of this form of construction is not alone their exact uniformity of weight (which in itself is absolutely essential where a speed of 2,000 r.p.m. is reached and



Exhaust Side View of the Aeromarine Motor

CONTRACTORS TO THE ADMIRALTY

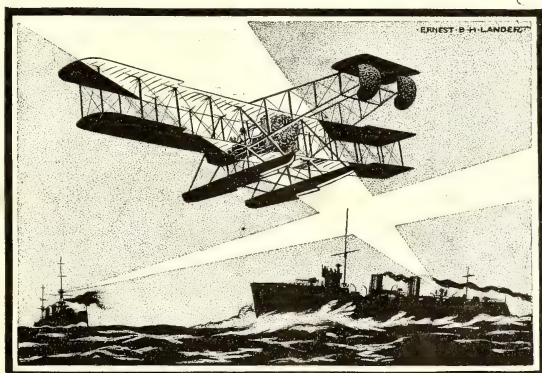
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maintained), but it further enables the makers to use rods of such light weight that the stresses due to transverse inertia and centrifugal force, etc., are reduced to a minimum. The rods are retained at a very low working temperature, this being accomplished by a special oiling system, to be described hereinafter.

The crank-shaft, of $5\frac{1}{4}$ in. throw, is also machined from the solid forged billet, heat treated and ground true, the material being the same as employed for connecting rods. Main bearings are provided on both sides of each crank throw, $1\frac{3}{4}$ in. diameter, $1\frac{1}{8}$ in. long.

The main bearing caps are each provided with four retaining bolts arranged transversely to the shaft. The two innermost bolts of each cap pass entirely through the crank case and are fitted with retaining nut at the top of the cylinder base. When this construction is considered in connection with the tie-down rods extending upward to light bridge pieces resting on and across the top of the cylinder heads it will be seen that this is an ideal method of staying against internal stresses, initial pressures of explosion, reaction forces, and so forth.

Additional ball bearings are fitted on either side of the driving gear, by means of which the propeller shaft is driven at a ratio of 1 to 1.75 of the motor. At the other extremity of the crank-shaft further additional ball-bearings are employed to carry the load of driving the cam-shaft, water and duplex oil pumps, and magnetos.

All bearings throughout the motor other than ball are die cast Fahrig metal and interchangeable.

These motors have been subjected to exhaustive tests in order to prove their mechanical construction, ignition and carburettor efficiency, with the result that the makers have made as standard equipment two Bosch magnetos, giving duplex synchronised ignition, each cylinder being provided with two sparking plugs.

Two three-way intake manifolds and two Zenith carburettors with synchronised throttles have proved an efficiency impossible to obtain with any form of six-cylinder manifolds and single carburettor.

The "Aeromarine" oiling system has been designed to meet the requirements demanded in present-day aeronautical motors, namely, that lubrication shall be maintained unchanged, irrespective of the angle of ascent or descent, looping-the-loop, or upside-down flying.

These motors are provided with an oil reservoir of five gallons capacity. When the motor is running, the gear driven duplex high- and low-pressure oil pump takes oil from the reservoir and delivers it through ways machined in the solid walls of the crank case, etc., to the crank-shaft bearings, through these bearings and into the hollow crank-shaft; thence to the connecting-rod bearings, and also to the driving gears mounted on the crank-shaft.

The oil is also delivered to and through the hollow cam-shaft. The cam-shaft is cross-drilled in a running line with the connecting rods, enabling a stream of cooled oil to pour on to the rods while running, retaining them at a low and even temperature and insuring their maximum strength. Oil is also directed from the cam-shaft to the cam-shaft bearings, cam-followers and guides, etc.

All the surplus oil is thrown by the rapidly revolving parts to the sides and bottom of the under half of the crank base, whereupon it drains down and through an integral hollow extension of the under half of the crank case. This extension leads down and through the oil in the reservoir to the low-pressure gear train of the duplex oil pump, from which it is returned to the reservoir and cooled.

By means of this system the crank case is constantly and thoroughly scavenged of all surplus oil and the danger of either flooding or starving the cylinders at any position of the motor is entirely eliminated.

These motors are provided with positive means for driving a generator required for lighting, starting, or

stabilising; also for driving gasoline pump and revolution indicators.

It has been expressly kept in view that they should in every detail conform to the requirements of the United States Government specifications, which are of a particularly searching nature.

The following statistics concerning this motor are of interest:—

PETROL CONSUMPTION.		OIL CONSUMPTION.	
Lbs. per hour.....	63.	Lbs. per hour.....	6.25
Gals. per hour.....	9.	Lbs. per h.p. hour...	.063
B.H.P.	100.	Weight in lbs.	435.
Lbs. per h.p. hour ...	.63	Weight per h.p. in	
Gal. per h.p. hour ...	.09	lbs.	4.35
Speed of shaft	1150		
Speed of crank	2000		

In addition to the 100-h.p. described, there is a newer 12-cylinder V-type engine of 165 h.p., which should be of immediate interest to pilots in view of the demand for big powers. This engine has cylinders and jackets of a new light metal invented by the firm's own metallurgist and known as "Vanadium Light." Drawn steel liners are pressed hydraulically into the cylinders, and the pistons are made of the Vanadium metal. The valves in this type are ordinary poppets side-by-side on the inside of the V, and are all driven off the single central cam-shaft.

It is hoped that samples of both these engines may soon be seen in this country, where they are sure to cause considerable interest. Those who have seen them in the States speak highly of the excellence of the workmanship and of the excellence of the performances they have put up not only on the bench but in the air.

Those desiring information about these engines should write the Bessemer Co., 1, Albemarle Street, W.

AIRCRAFT ACCELERATION.

Mr. B. R. Nutter, of The Garage, Nelson, Lancs., intimates that his firm will be glad to take on orders for parts of aircraft or for complete machines to any design.

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The floor space, all on the ground floor, is about 2,000 square yards at present, and could be enlarged to three times the size if necessary.

Firms in the Northern districts who want to expand their output would do well to get in touch with Mr. Nutter.

TO MOTORISTS.

A new Order as to lighting came into operation on Sunday, August 14th. All the provisions of the previous Orders as to reduced lighting are retained, and the hours affected are:—

From 8.30 p.m. till sunrise during the month of August.

From 7.30 p.m. till sunrise during the month of September.

From 6 p.m. till sunrise during the month of October and until further notice.

One new provision calls for special attention. As from Sunday, the lighting-up hour for all vehicles is changed. Instead of the front and rear lamps being lighted, as hitherto, at one hour after sunset, lamps must now be lit half an hour after sunset, and all vehicles travelling in the public streets must continue to show their lights until half an hour before sunrise.

On the other hand, it apparently means that if it grows dark early on a September evening it is permissible to drive with full head-lights on, inside the Metropolitan Police District, until 7.30 p.m., as the "reduced lighting" rule does not operate until that hour. Similarly, if it grows dark about 5 p.m. in October (as it sometimes does), one may used head-lights till 6 p.m.—if the rule means anything at all.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

One of the great arts of life, government, and popular engineering, is the evasion of all responsibility you can persuade an eager democracy to accept. That is why I never give any reason for any statement, in such terms that you, my dear reader, may persuade yourself that it must be so. That is why the late and great Mr. Gladstone, master of democracies, offered his famous three alternatives. But in this case of the Beardmore water-jacketing I can only offer two. In fact, the only alternatives possible are the old Napier practice of casting a monobloc water-jacket for all cylinders out of aluminium—in whatever alloy may be used—in one piece with the upper half of the crank-chamber; setting in the steel cylinders, duly tapered, as liners—which enables a damaged one to be readily removed—and fitting separate heads, or a one-piece head for the lot, after the fashion of certain very highly-reputed American car-motors. Or a similar steel-lined monobloc jacketing mass might, commercially enough, be built in a skeleton steel frame and copper panelled, by groove-and-wire brazing, in the Salmson way, or even by electro-depositing: the heads being provided for as before.

PROS AND CONS.

Such alternatives—especially the latter—are not without their points, and designers of aeromotors in search of a practical change may yet come to one or other, albeit even the latter system has been used once or twice in the United States. But the old Napier way, with such long walls of aluminium, might well breed too many wasters to pay, even with the most careful of modern foundry work. It would need a lot of milling-tool work to get the jackets as thin as might be desired, and aluminium at the best is not so efficiently conductive as copper. What might be done along these lines with Navalium, or one of the other alloys that are claimed to be steel-strong, yet light as aluminium, or, again, with the excellent Monel metal, remains to be seen. Only these days of frantic-furious output are hardly appropriate for any such lengthy experiments. The tapered-nipple Germain way, too, is the only one for head-circulation-connection with the main jacketing, if the nuisance—a highly dangerous one for an aeromotor—of burnt and blown packings and gaskets is to be avoided. Also, the fact that we have not valveless two-strokers to deal with, but four-strokers with the valves and their surrounding jacketing very much to be catered for, puts the single-piece, inverted-bath-like jacket—of which more later—outside practical consideration.

Add to all this the fact that positive lubrication is almost the leading essential for a trustworthy aeromotor, and that it would be almost impossible to make the Bosch-Beardmore or any other external lubricating system agree with either of the above jacketing systems, and it will be seen at once that the unit system of mounting and jacketing is the most readily practicable, if not the only way, of dealing with steel cylinders conventionally.

Secondly, nothing about the Beardmore aeromotor calls for more notice than the way in which the copper water-jackets have been electro-deposited. One might say "admiration" without imitating a car write-up, or doing more than bare justice; considering that it is just here that everybody else—notably the highly-competent engineers who tried to make a success of the British E.N.V. motor—failed so badly. They, too, had special plant enough, no doubt; but they certainly could not have had the benefit of the special experience in working that most tricky of metals, copper in fusion or solution, that this firm evidently has. Is it high voltage?

THE BEARDMORE WAY.

For there is a way with it, beyond the mere laboratory

results. To appreciate this better, let us look at the requirements. Above all things, those great exhaust-valves need the most ample jacketing. So much, indeed, that one would say they needed the first flush of the cooled water right beneath the chin of each exhaust passage, instead of the last of the hot. But such an arrangement—though the same degree of cooling for the cylinders generally might have been preserved—would have crowded the ignition-lead casings out rather too near the exhaust pipings unless these had been carried overhead, when they in turn, would have made the valve-gear rather less accessible: always a matter of instant importance in an aeromotor. The best compromise, then, seems to have been effected by carrying a line of large water inlet tubes—flexibly connected so as to form practically an omnibus tube—along the bottom of the jackets on the exhaust side, so that after all the immediate upward flush of the cooled water—which seeks by attraction as well as repulsion, any heated surfaces—runs to the valve seatings, and entries, and syphoning round these to the outlets directly above, automatically keeps the circulation fairly rapid around the cylinder bodies.

AND CERTAIN ALTERNATIVES.

Of course, but for the diagonal valve-setting, which is the main feature—in some respects the best one—of this design, and the above special necessity for cooling the exhausts, the jacketing of these cylinders by mere capping, with bondings of threaded steel ring-nuts over all insertion points, or groove-and-wire brazing, would be a fairly easy matter. And I may here suggest that even with this valve-setting it would not be impossible to cap on the jackets by leaving them open in the first place, on the exhaust side, from the cross-diameter of the exhaust valve opening downwards to the bottom, and then seaming on that patch with its inlet water-tubing, and groove-and-wire-brazing at all insertion points to finish.

Or better still, the exhaust valves might be carried in detachable box-seatings, having circular spider-frame extensions to take copper water-jacketings—electro-deposited or otherwise—and seating themselves externally in a tapered-and-ground fit into the exhaust passages: so that large open ring-nuts, threaded right and left, might unite seating to exhaust passage, and box-jacketing to cylinder-jacketing in a leak-proof joint at one operation. In either case the job would be as neat in a good craftsman's hands, and certainly as reliable. Possibly as commercial for rapid work: and so in any case to be recommended to any would-be maker of a diagonally-valved motor who cannot command any more of the Beardmore facilities than good copper-smith work.

But—there is the Beardmore electro-depositing way; worked out, furthermore, effectively to beat the old trouble of leakage at the jacket bottoms, by carrying the copper in a thick and solid skin—and over two little flange-rings at that—down the cylinder-wall for a couple of inches. Such is the method, on the whole, that there is neither springiness nor granulation about the metal, which comes out as clean, evenly thick, and as pliant as so much sheet-stuff. Yet—speaking of pliancy—there is one feature of old practice—such as that of Panhard or Delahaye, Tony Huber and other ancient motor-lights—that I miss, and would as soon see embodied; that being the concertina-moulding—for which, despite the close cylinder grouping, there is still room enough—midway down the jackets. Nothing so relieves the strain on thin copper of that merciless element, water, force-fed at high velocity.

THE CARBURATION GENERALLY.

The next superficially visible feature of the Beardmore aeromotor is the induction system; which goes by three—slightly offset rearwards for the inlet connections to clear the valve-gear rods—from two carburettors. Short

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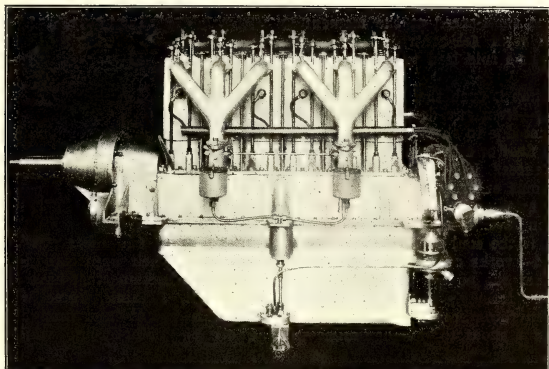
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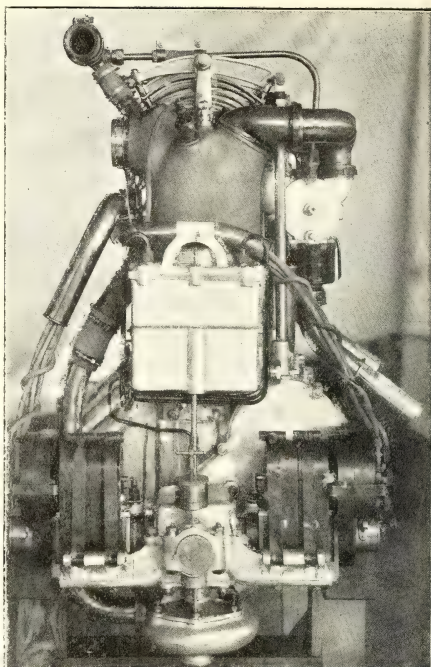
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of a taper-diametered omnibus-tube for all six inlets, from a single carburettor—in the style of the Brillicé and one or two other French marine motors, and latterly one of the Sheffield-Simplex models—this is probably the best arrangement for any six-cylindere vertical model; especially when, as in this case, the throttling is done by two positively-acting sleeves, or rather drums, both of which are mounted on the same spindle, which is rotated, not pulled, so that there is no depending on any spring-action for the return. Where you set the motor in this way, there it remains, and no accidental movement of your foot or hand can vary it. A special design, which consists in the main of making the float-chamber concentric to an open-bottomed jet-chamber—the throttle sleeves acting also as air inlets to keep the ratio of air and petrol constant over the range of useful speeds—below the throttles—combines with these latter more or less, so that damage by back-firing is made impossible.

The water-jacketing of the carburettors, too, helps not only to keep the mixture of uniform quality and efficiency at wide variations of temperature and height, but also to keep the petrol consumption at the low average of 0.6 of a pint per h.p. hour. Indirectly to keep down the oil-consumption as well; since too much petrol leads rapidly to overheating, and that to an almost immediate increase of lubricant required; albeit the oil delivery, being a matter of adjustment in the Bosch lubricator—which is worked positively from the crank-shaft through a spindle and mitre-gearing—naturally depends solely on the shaft-speed at the moment. Which explanation would seem self-contradictory nonsense, did not overheating as a rule lead to a temporary increase of that speed.

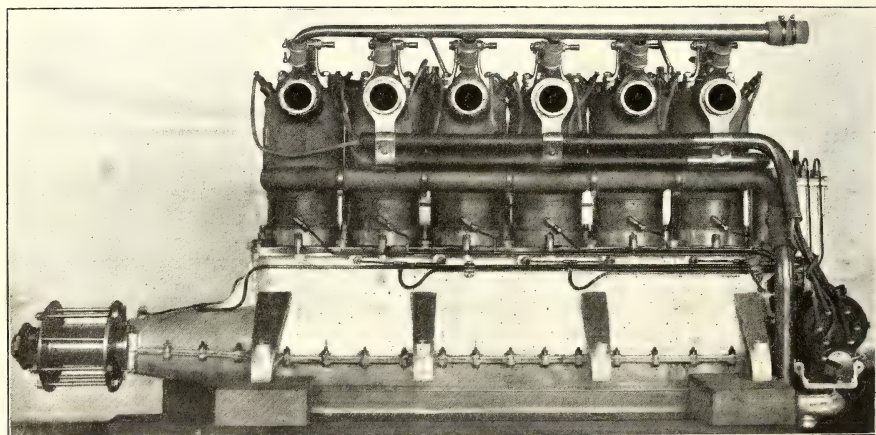
At any rate, the carburation is such that it never goes wrong—one may safely say—from any defect in the carburettors *per se*, that is not due to sheer wear, or such an accident as a punctured float or a broken needle-valve, two most unlikely occurrences. If, then, it should go amiss, the cause will be some external trouble, such as dirt in the connections or arising therefrom, or running the motor with the ignition lever too far retarded. But normally this carburation is the soul of the motor's reliability, and—it is claimed—works out so that one may practically depend, in either the 90-h.p. or the 120-h.p. model, upon a consumption from 7.3 to 9.4 gallons an hour. Which may mean anything from 70 miles' flight upwards; or something round about the average mileage



End View of the 120-h.p. Austro-Daimler Engine.

of a car of half the rated horse-power, when you come to work it out.

Those whose education and artistic sense impels me to strive for their appreciation—one does not appeal to Broomielaw Boëtians that have strayed out of the boiler-shops—will, I think, agree with me that mechanical aeronautics has at least brought about a renaissance of the art of motor-design which “commercial” auto-



Side View of the 120-h.p. Austro-Daimler Engine.

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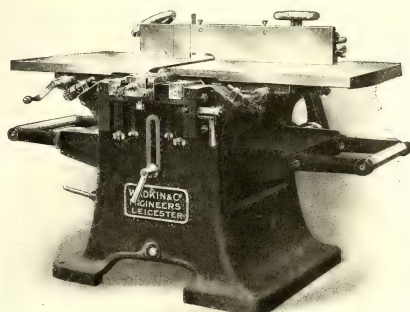
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mobility and its slop-shop "standardisation"—of a kind beyond forgiveness—had all but killed. Thanks be to that, there is very little sameness in aeromotor design so far. But even where diversity and originality—or, at least, clever adaptation—is the rule, there is always one mechanical feature more noticeable than the rest, in the average example.

In the case of the Beardmore-Porsche design, it happens to be the valve-gear, with its single pivoted leaf-sprung rocker and jointed tappet-rod operating both valves: the laminated spring serving at the same time to hold both valves up to their seatings: while the valve-tails are consequently in such close relation to the rockers that they keep it in balance and the tappet-rod in alternate tension and compression from the actuating mechanism.

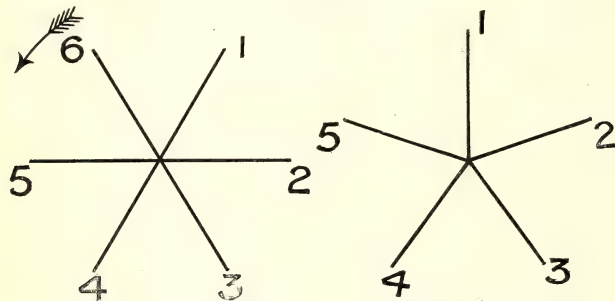
(To be continued.)

AN IGNITION PUZZLE.

In the interesting article by Mr. Geoffrey de Holden-Stone, dealing with the ignition system of the Anzani engine (*THE AEROPLANE* of July 28th, 1915), I think some obscurity may arise through not separating the speed of the armature and the distributor relative to the crank speed.

In all engines using the Otto cycle and having 3 or more cylinders, a distributor is used, and the speed of this is, as he states, always 50 per cent. of the crank speed. The armature is, however, a totally different matter. Magnets of multi-cylinder engines interrupt the primary circuit twice per revolution of the armature; hence, taking first the three-cylinder Anzani, three sparks would be required in two revolutions of the engine shaft, and for this the armature must rotate $1\frac{1}{2}$ times. The ratio of the revolutions of engine shaft to armature is therefore 2 to $1\frac{1}{2}$, or 100 to 75, as stated in the official list.

The gearing between the armature and distributor would be such that the armature would make $1\frac{1}{2}$ revs.



while the distributor made 1, or the correct 50 per cent. of the engine speed, as Mr. de Holden-Stone states.

In ordinary four-cylinder engines the armature runs at engine speed, thus producing 4 sparks in 2 revs. of the engine, while, as before, the distributor runs at half-engine speed.

In an ordinary six-cylinder engine the armature runs at $1\frac{1}{2}$ times the crank speed, thus producing 6 sparks in 2 revs. of the engine, and again the distributor runs at half-engine speed. It should be noted that in all the above three cases the gearing between armature and distributor varies according to the number of cylinders.

But here is the real puzzle of the Anzani ignition, which, I hope, Mr. de Holden-Stone will clear up for your readers. What is actually the order of firing?

In one part of the official list it is stated "regular successive explosions consequently taking place at 120 degrees interval." In another place it is stated "the cylinders fire successively . . . at intervals of $(2n + 1)$ cylinders."

Let us take the first "official explanation." This gives the order (see diagram) 1, 3, 5, 6, 2, 4, or 1, 3, 5, 2, 4, 6. Now, this is a difficult proposition, for the interval from 5 to 6 is 60 per cent. and from 5 to 2 is 180 per cent., and this would involve complications in the distributor.

In the second "official explanation" " $n = 1$ in six-cylinder" engines, therefore the firing interval is 3 cylinders. This seems to imply that the cylinders fire in pairs—i.e., 1 and 4, 2 and 5, 3 and 6. There is evidently some little mystery here if the above two official explanations are examined.

Radial engines with cylinders of 3, 5, 7, or any odd number are simple matters for even spacing of firing. In Fig. II, representing a 5-cylinder engine, the order would be 1, 3, 5, 2, 4, but complications arise with cylinders of even number, unless two magnets are used. —(Signed) A. H. BURNAND, Southampton.

A WATCHMAN'S NOTES.

I have just ridden a two-wheeler twenty miles over the furrows and valleys running among the little hills on a Kent main road, and so am able fully to enter into the shaky feelings of a Jack-in-the-box during the exciting moments ensuing on the rapid opening of his box. Belief in a familiar proverb, "Not every evil comes to do us harm" (Anglice, "It is an ill wind," etc.), consoled me as the milestones passed—were passed, I mean—in increasing haziness. And it also induced prophetic peering into the time that is coming.

This luckily still remains as one of the few certainties on which he who must swear can do so. Another is that the surface of our airways is not, alas! in any danger yet of suffering from lack of upkeep through scarcity of roadmenders or want of tarring; a point this which is going to give them a big pull over the highways of past days.

For all signs indicate that by the time when our enemies have been so sufficiently confounded that this nation can safely unbuckle her arms, three things will have happened:—

To begin with, the roads of England will have become impracticable for fast traffic, even if there be no invasion.

To continue with, the aeroplane factories will have increased hugely in number and output.

To end with, a great moral slump will have occurred in pilots, great numbers of whom will return to civilian life expert aviators, and determined to find lucrative work as such.

Motor-car builders are even now showing signs of striking off into two lines—aircraft and commercial motor building—a tendency which appears likely to aggravate rapidly.

Aeroplanes, when peace is re-established, will not be so urgently needed by Government, and should certainly come down in price, which would facilitate the promotion of air transport services.

Money, we learn, will be scarce, so busy men will have to hustle. How better than by the direct air routes? A larger outlook and a more distant and extended view will surely have penetrated even the most insular among us, and he will want to have the quickest way of getting there—or will have to want in another sense!

* * *

The wounding of pilot or observer, or both, is quite the usual feature in fighting between aeroplane and aeroplane—at any rate, in the reports of such as fed to the ordinary person.

Yet one remembers describing totally enclosed bodies with portholes which were to obviate all this and also other discomforts to be expected at high speeds or alti-

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tudes. Have none of them been found practical? Or have our air forces already benefited by them unbeknown to us?

Or, again, are they here at home, up someone's sleeve, so as not unduly to discomfort the Teuton?

Seriously, is it impossible to protect, at any rate, the pilot by a light armoured cowl or dome, possibly with a pair of periscopes, or by some arrangement such as one gets suspicions of as an armoured car projectiles by?

* * *

If it be true that zinc is less abundant than usually, is this because our humane Government is causing all barbed wire for entanglements to be doubly galvanised lest the lovable Bosche should get blood-poisoning from rust and die?

* * *

Among war pastimes the collecting of those local notices which tell the simple and aged what to do in case of a hostile air raid or an invasion is being keenly taken up, chiefly by those who cannot write to the papers about other peoples' business.

Quite a number of these documents may be rounded up in villages in our South-Eastern districts, and annexed or copied. Expert humour-lovers consider them

quite as good reading as "Punch," and likely to become valuable. So they are, after all, of some use, for cheerfulness in its superficial aspect is good.—T. S. H.

ADVERTISING AUSTIN MOTORS.

It was recently recorded in this paper that Mr. J. D. North, formerly of the Grahame-White Aviation Company, Ltd., had been appointed to a responsible post with the Austin Motor Company, Ltd. The latter firm has for some years past issued a very attractive advertising journal known as "The Advocate." It is interesting to observe that the current issue contains an excellent two-page picture showing a view of the works at Longbridge from a tractor biplane.—D. W. T.

AN R.N.A.S. EFFECT.

The war correspondent of "Berliner Tageblatt," Mr. Heinrich Binger, reports, being himself engaged with the flotilla of the German Motor Boat Voluntary Corps, on service in Belgium:—Our most exciting incident was in the dockyards by Brugge, when all our motor boats rested close side by side, unable of moving ahead or astern, and we were sighted by an English aviator, who dropped two iron greetings, the one falling in the sea, and the other missing the vessels by only 100 metres. All window-panes in the motor boats smashing.—Hr.

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THE WEEK AT HENDON.

Countless thunderstorms, mingled with welcome and useful calm intervals, have been the features of the week at Hendon. The weather remains obstinately unsettled, and one feels a certain amount of sympathy for Mr. Mitchell, who can never estimate in the morning how many visitors will be asking for tea in the afternoon.

However, the energetic and increasing colony at the London Aerodrome have learned long ago to be philosophic and to take prompt advantage of such fine weather as may be forthcoming, and as a result a good deal of school work has been done and many tickets taken. My favourite definition of a philosopher, by the way, is one who doesn't want what he can't have.

Few incidents of note have occurred. On Thursday Mr. Virgilio was instructing a pupil on one of the Ruffly-Baumann Caudrons when something unexpected happened. Fortunately it happened on the ground. Whatever the cause may have been, and opinions vary, the machine turned a somersault. Mr. Virgilio was taken to the hospital, but he had sustained no serious damage beyond a bruised jaw, and on Saturday he was walking about wearing a bandage, which suggested a school-boy's first toothache. On Sunday he was "flying as usual."

Mr. G. W. Beatty, whose energy is almost proverbial, has no time for popular superstitions. On Friday, the 13th inst., he started to learn to fly on a Caudron. Nobody living could teach him anything about the Wright machines, as everyone who has seen him flying will agree, but the Caudron is altogether a different proposition. However, on Sunday he was aloft on his new mount, and evidently quite at home.

The wind was tricky on Saturday, and little was expected in the way of exhibition flights. The clouds were unusually beautiful, and more than one camera was paying more attention to sky-scapes than to the few machines which went up.

Mr. Birchenough was busy testing Maurice Farmans (or should it not be Farnen?). Mr. Roche-Kelly and Mr. C. B. Prodder made several distinctly good flights on Beatty-Wright biplanes in a fairly high wind, and Mr. Osipenko also went out on a G.-W. biplane, but did not like it.

On Sunday there were more thunderstorms, although in the early morning a good deal of school work was done. Later in the afternoon the air was delightful, and a great many flights were made. The clouds were more picturesque than ever, and a large rainbow gave a topical touch to the scenery by displaying the colours of practically all the Allies.

As already mentioned, Mr. Beatty was flying one of his Caudrons. Messrs. Prodder and Roche-Kelly were out with and without passengers. The three Grahame-White pilots, Messrs. Manton, Osipenko and Winter, were all out. Mr. Birchenough tested another Maurice Farman short-horn at a good altitude. Messrs. Baumann and Virgilio made several flights each, the latter being seen several times to hold his arms out in an appealing manner, by way of demonstrating how stable and well-behaved his faithful Caudron was. Mr. J. L. Hall also gave an exhibition flight.

In the evening the schools were fully occupied till night crept on, and this was by far the most interesting part of the day's work.—D. W. T.

THE IMPORTANCE OF ORGANISATION.

The articles on "Small Factory Output and How to Speed It," by Mr. George H. Mansfield, which are appearing in *THE AEROPLANE*, have been attracting widespread attention. This is not surprising, for Mr. Mansfield has an unusual talent for organising, and few men know better the value of method in running an industrial concern.

He is not only a practical manager of works and work-people, but was thoroughly well trained as a chartered

accountant, and therefore understands the financial aspect of a business, however intricate it may be.

Having relinquished the position of works manager with the Grahame-White Aviation Co., Ltd., he has now opened offices at 17, John Street, Bedford Row, W.C., where he proposes to act as a consulting and practical organiser.

He is prepared—and qualified—to advise on departmental organisation, stock-taking, bringing accounts up to date, particularly where they have been suffering from the pressure of war contracts; auditing, or dealing with income-tax returns and claims.

Mr. Mansfield's services should be of real value to manufacturers, but especially to the aviation industry, with which he has so long been connected.—D. W. T.

School and Weather Reports.

	Mon	Tues	Wed	Thurs.	Fri	Sat.	Sun.
Hendon	Wet to Fine	Varied	Varied	Varied	Varied	Storms	Fine
Midlands	Fine	Fine	Stormy	Stormy	Stormy	Calm	Calm
East Coast	Rain	Fine	Fine	Fine to Show'y	Fine	Show'y	Fine to Thunder
Lake District	Windy	Fine	Wet	Fine	Windy	Fine	Thunder

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, R. Kenworthy and A. E. Mitchell.

Pupils at work during week.—With instructors on Beatty-Wright machines: Messrs. Arbon (36), Berridge (23), Bond (20), Crossman (55), Delves (75), Dickenson (115), Eaton (30), Fellows (5), FitzHerbert (20), Fox (41), Greenhill (18), Hoskins (5), T. Jones (55), King (47), Litton (16), Nash (10), Ross (74), Smith (20), Spicer (10), Theo (69), Thompson (5), Tolhurst (10), Vickers (20), Willmet (19), Zimmermann (16), Everidge (46), Hoskier (10).

On Caudron machines: Messrs. Arter (10), Boysen (40), Broadbent (20), Cadogan (45), Coates (50), Collett (30), Cox (10), Davison (30), Fawcett (20), Fellows (5), Goodfellow (20), Greenhill (10), Hoskins (10), L. F. Jones (20), Kirkwood (16), Middleton (20), Moxon (15), Nicholson (20), Overton (5), Owen (20), Whincup (15), Wiles (5), Campbell (60), Thomas (35), Summers (30), Mellings (25), Hoskier (10), Bowick (20), Begg (20), Collier (25), Grant-Suttie (35).

Certificates were taken during the week by Messrs. Tomlinson, F. King, Eaton, Spicer, each of whom made excellent flights.

Machines in use.—Propeller biplanes: Beatty-Wright dual-control and single-seater; tractor biplanes: Caudrons.

Remarks.—Exhibition flights were given on Thursday, Saturday and Sunday, and 11 passengers were taken up.

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Pupils with instructor on machine: Messrs. Belton (20), Ovene (16), Young (8), Bailey (28), Liddell (18), Hughes (30), Prothers (16), Stewart (30), Muspratt (36), Rees (34).

Pupils doing straights or rolling alone: Messrs. Belton (12), Young (16), Gardner (26), May (2), Wilson (34), Rees (6), Stewart (6), Muspratt (6), Hughes (18).

Pupil doing eights or circuits alone: Mr. Wallis (30).

A certificate was taken during the week by Mr. Norman Wallis in very good style.

Machines in use: Tractor biplanes, R.-B. 50 h.p., R.-B. 60 h.p., and Caudron type 50 h.p.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Beare, Ford, Gasson, Roach-Pierson, Cory, Smethurst, Biscoe, Cross, Gammon, Sadler, Davies and Hadow.

Pupils doing straights: Prob. Flt. Sub-Lieuts. Beare and Roach-Pierson.

Figures of eight or circuits alone: Prob. Flt. Sub-Lieuts. Blake, Murray and Sieveking.

Certificates were taken during the week by Prob. Flt. Sub-Lieuts. Perham, Blake, Murray and Sieveking.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, J. H. James, G. Irving and C. Jacques.

Pupils doing straights or rolling alone: Messrs. Franklin, Sargood, Rochford, May, Blackburne-Maze, Wilcox and Dawson, rolling. Messrs. Woodley, Roe, Moynihan, Conner, Scott and Frost straights.

Figures of eight or circuits alone: Messrs. Sykes, Wynne-Eyton and Ward.

On Monday, the 9th inst., Lieut. Wynne-Eyton took his "brevet" in fine style after only 12 days' tuition, and on the 12th inst. Mr. Sykes passed for his certificate, making a good, steady flight.

On the 13th inst., another good certificate was taken by Lieut. G. Bernard Ward, who has only been in the School nine days, and on the 15th inst., Mr. H. Conner also passed well.

AT THE HALL SCHOOL.

An excellent week's work at the Hall School practice not being hampered by the terrific thunderstorms experienced during the week, J. W. Gordon qualified for his Aero Club Certificate which he took in grand style. Pupils receiving instruction with Mr. Stevens were:—Lieut. Jowett (2 straights and 3 circuits), Mr. Bell (3 straights and 4 circuits and 1 figure of "8"), Gordon (2 circuits and figures of "8"). With Instructor Cecil M. Hill, Messrs.:—Huggan (58), Watson (31), Littlewood (31), Lieut. Jowett (26), Hatchman (30), Wilkins (14), Goodrich (46), Hooker (20), Bell (30), Hamer (26), Drew (14), F. Hall (40), Butterworth (10), Arnsby (14), Sepulchre (23), Jonge (50), Mason (10), Ackroyd (7), Scott (8), Cook (24), Broad (10), Bayley (7), Russell (32). Machines in use: Hall tractor biplanes. The following pupils are showing special aptitude and are now practically ready to take their Certificates, Messrs. Bell, Lieut. Jowett and Mr. Goodrich.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week:—Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with instructor on machine: Messrs. Inglio (5), Lawton (15), Latch (56), Robertson (42), Reid (7), Yates (16), Ingham (14).

Pupils, with pilots in passenger's seat:—Messrs. Macaskie (24), and Slingsby (12).

Machines in use:—N.A.C. 50-Gnome pusher biplane, N.A.C. 80-Gnome pusher monoplane.

Mr. Lankester Parker testing on both machines. Mr. Robertson making exceptional progress. Although there was flying on every day except Wednesday, wind or rain limited school work.

BIRMINGHAM.

AT THE MIDLAND FLYING SCHOOL.

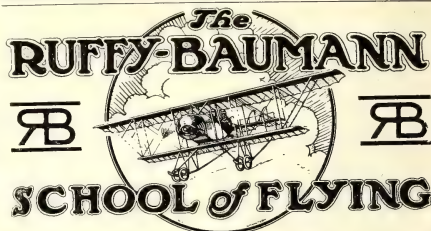
Instructor for the week: Mr. S. Summerfield.

Pupils with instructor: L. Monfeal, Choyd Mento, J. Tzising, C. Cheung, C. Chong, W. Watson, K. M. Chan, C. Kayfong, K. Jokping, two trips each, 10 minutes each time.

Pupil doing straights: J. Tzising.

Machine in use: Blériot monoplane.

Owing to pupils taking vacation during the previous week very little school work was done. Owing to bad weather this week, all pupils have had to go with the instructor. The new machine under construction is progressing favourably.



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Mr. T. D. Cole, 27th July, says: "I think your machines are ideal for school work, being fast and more particularly of the tractor type."

Lieut. C. H. Dixon, 7th Aug., says: "Shall always recommend prospective pupils, like myself, who have only a short time at their disposal."

Mr. J. B. Fitzsimons, 10th Aug., says: "Your school is undoubtedly the best I have come across, considering I joined during the bad weather and my course only lasted three weeks."

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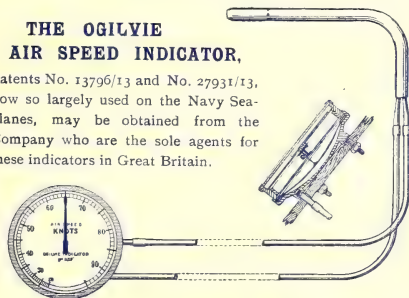
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WEDNESDAY, AUGUST 25, 1915

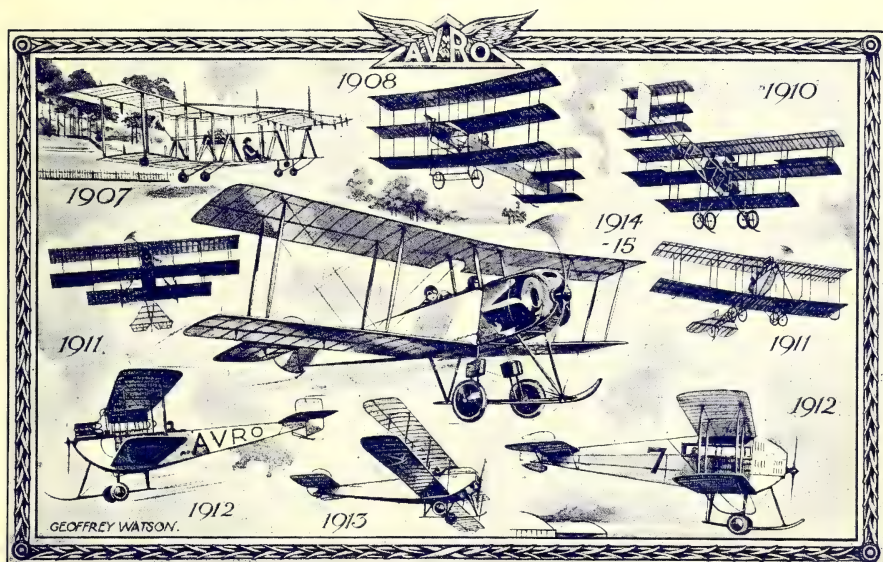
Edited by C. C. Grey

Vol. IX. No. 8

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ON WAR SICKNESS.

Presumably most people in the British Empire are fairly sick of the war. One must except the officers and men of the various units which have not yet seen any fighting. Some of these battalions were formed nearly a year ago, and have been kept at home either because some War Office clerk happened to skip their number owing to his being interrupted when making out the embarkation order, or because another clerk wrote a "4" that looked like a "9," so that the ninth battalion was sent out after a month's training and left the fourth at home, or because, though the "men were splendid"—according to tradition—their original officers could not be trusted to handle them in the field—this applies chiefly to yeomanry regiments, I believe.

Another class which is not sick of the war is the youth at school, who is a year or two under age for the Services and hopes the war will hang on till he can get a commission without having to swot for really stiff exams. At the Shop or Sandhurst.

Yet another class is the so-called British workman, who does as little work as possible for the maximum wages, and is as little of a man as anything this country has ever produced. He knows he is in for a cold time when the war is over and he will only be paid what he is worth.

It is also possible that some manufacturers of war material, including aircraft, may have a half-ashamed hope that the war will last till they have put their businesses on a sound footing and have in some measure recouped themselves for past years of official neglect and unprofitable expenditure.

Small blame to any of them, for everyone believes in the injunction "make hay while the sun shines," which injunction has all the more force when one sees a mighty big black cloud on the horizon.

OUR DOCTORS.

In a way also, it is in the interests of the whole British Empire that the war should be prolonged for a reasonable further period. Germany's practically uninterrupted success so far has been due to her wonderful system of organisation. The longer the war goes on the more wear and tear there is on that system and the sooner certain links will break and wreck the organisation. On the other hand, we in this country are only now beginning to find ourselves.

Hitherto this country has been like a wealthy and overfed person living under the régime of an old-fashioned out-of-date country doctor, whose only remedies for the ills of overfeeding have been blue pills and poultices—purgatives and sedatives—otherwise taxation for the well-to-do and soft talk to the masses.

At present that same person is under the spell of quack doctors, who feed him with patent medicines and faith-healing séances in turn—as, for instance, Labour Exchange interference with the freedom of labour, Munitions Ministry "control of factories," the super-taxation of war profits, and "doping" by Censorship on the one hand, and hysterical recruiting campaigns, blatant, bathotic poster advertising for both the Army

and munitions factories, and the neurotically pseudo-patriotic method of stirring up public feeling very generally used by those whom an apparently displeased Providence has set in authority over us—a method so ludicrous as to be screamingly funny if its effects were not so disastrous.

Presently, if we survive this mixture of Christian science and patent pills long enough, and are warned by some unusually acute pains—in the form of defeats—that our quack doctors are worse than our mid-Victorian general practitioners, we shall awake to the fact that the cure for internal disorders is simply plain hard work.

DOPING THE BODY POLITIC.

At present the Censorship is acting as a hypodermic syringe to dope the nerve system of the Empire—which is the Press—with anaesthetics so that the acute pains may not be felt. For instance, one part of the "body politic" is not allowed to feel the acute local pain afflicted by a Zeppelin raid at another part. It is only a pin-prick, it is true, but it would indicate to the whole body the near presence of a powerful enemy, if the nerves between the afflicted part and the rest of the body were not doped.

Similarly "regrettable incidents" which are not perhaps actual defeats, but are unsuccessful attacks causing heavy casualty lists, are "doped" out and the body politic is soothed with officially approved descriptions of the heroic bravery and "personal ascendancy" of our troops. The people who pay for the war must not feel the pain of it. If they did the quack doctors might not draw their exorbitant fees.

A very little knowledge of medicine is sufficient to teach the evil results of treating even a sound physique with artificial sedatives, quack nostrums, and wrongly-applied mental treatment of the kind which produces hysterical violence instead of a calm and determined state of mind. At present the psychic physique of the British Empire is fairly sound. The outlying members—the Colonies—in particular are in excellent condition. The chief trouble is simple indigestion due to overfeeding, which affects the stomach—industrial England—and the head—otherwise the electorate of the British Isles and the London populace.

The cure for this comparatively slight ailment is fresh air and exercise; otherwise freedom to know the best and worst that is happening to everything and everybody connected with the war, and plenty of hard work to clear the head of foolish ideas. The great difficulty, of course, is to see just how the desired change is to come about.

SOME SIMPLE REFORMS.

The Censorship, as at present existing, should naturally be abolished. Every paper should be its own censor, and should be liable to suppression or prosecution under the Defence of the Realm Act if it published anything of use to the enemy.

At present the Censorship merely guarantees that if

a paper publishes nothing but what has passed the Censor that paper shall not be prosecuted. Naturally the individual censors cannot all be intelligent, or all acquainted with naval and military history, or all possessed of technical knowledge, and consequently ludicrous mistakes are made.

For instance, the other day a couple of articles which I wrote for another paper were submitted to the Censor. One, concerning the Naval Air Service, consisted absolutely and entirely of paraphrases of Admiralty communiqués, and was censored till there was nothing left of it, presumably because it contained statements of fact concerning the movements of His Majesty's Aircraft—albeit all between a year and one month old, and all disclosed officially at the time when they happened. The other dealt with the R.F.C. and was passed without—so far as I could see—the excision of a word, apparently because it dealt in generalisations and merely expressed opinions. Yet I must admit that if I had been a censor engaged in seeing that the public was only permitted to be told that everything done officially was done in the best possible way, and that every official view was the correct one, I should have censored several things which were allowed to pass.

Abolish the Censorship, make the editors of papers responsible for their own actions and judgment, and at once you give the aforementioned nerves of the body politic more fresh air and considerably more exercise, with the result that the body must profit thereby.

HEALTHY EXERCISE.

In another direction, which affects very directly the aircraft industry, and all connected therewith, there is

ON INCREASING OUTPUT.

The cause of insufficient output are many and all need different treatment. Tactless inspectors cause friction between managers and foremen, or between foremen and workmen. Ignorant inspectors reject parts or material without cause, forgetting that their job is to pass stuff and accelerate output, and not to reject stuff and delay output.

Deliveries of raw material hang up production, and the machinery for hustling such deliveries by means of official pressure is not sufficiently developed. Sometimes these delays are caused by transport difficulties on the railways, and there is no provision for proper acceleration by means of motor transport.

I have known a Government steam lorry and two men sent empty on a two days' journey to fetch an empty packing case, when a proper internal system of transport organisation would have sent half a dozen badly needed engines to the same firm. And I have known an engine, the property of the Government, to lie forgotten for months, till someone happened to want the case back and found it had not been returned because there was an engine inside it awaiting instructions.

All this sort of thing is caused by pure bad organisation, owing to overloading a willing man with work, or appointing a man to an important position without giving him power to delegate his duties to subordinates.

In some cases deliveries of complete aeroplanes are hung up owing to the slackness of inspectors in calling to inspect them, and apparently there is need in both Services for officers whose duty it is to inspect the inspectors and see that they are always on their jobs and not away enjoying themselves, or slacking at home instead of being on time at the works.

In these and other similar ways, existing Government departments can accelerate the output of machines as they already exist, but much further acceleration can be obtained by simplifying and improving the designs of aeroplanes now being made.

room for reform. The Munitions Ministry has been formed to do the work which ought to be done as a matter of course by the technical departments of the Admiralty and War Office, including the sub-departments which deal with the placing of contracts, and acceleration of deliveries. So far it seems as if the only result has been an increase in the amount of red-tape bandages wound round everything and everybody.

Something very like "control" of factories and limitation of profits was tried in France many months ago, and the only result was that the managers of the factories collectively said, "Very well! If you are going to manage our factories, manage them yourselves, and we will take a much needed rest." In a few weeks the output fell off so badly that the old managers were begged to come back, and the output promptly increased.

M. Thomas, the French Minister of Munitions, happens to be peculiarly gifted with common sense, and by consulting with the various manufacturers instead of laying down a maze of rules and regulations, he has induced a phenomenal increase of output. The same thing could have been, and still can be, done here if people in authority will go the right way to work. Only, of course, the right men must be put in the right place.

Where the manager of a factory needs leading it is no good bullying him, and where he needs bullying it is no good trying polite persuasion. Consequently a very able man is needed to allocate the various inspectors to the various workshops. Hardly any aircraft factories in this country are turning out as many machines as they could if all things were organised to perfection.

SIMPLIFICATION AND IMPROVEMENT.

Simplification and improvement will not be obtained from the civilian technical departments either of the Admiralty or the War Office.

At one time I had hopes of the Admiralty's tame designers, but in the past few months I have learned a trifle more, and I freely admit to my friends at the Royal Aircraft Factory that nothing Farnborough has produced, or even projected, has been so hilariously funny and so obviously futile as the "Sparrow," or more obviously preordained to slay its pilot. It beats the R.A.F. "canard" and the F.E.2 rolled into one. And I am not sure that the Admiralty's idea of designing a big seaplane is not equally serio-comic. Also, I do know that one of their brain-waves in float design has resulted in effectually preventing one of the best seaplanes the Navy has yet possessed from getting off the water at all, though with its maker's floats it got off as easily as a seagull and handled beautifully when in the air.

Meantime, all this futile fiddling and experimenting is producing nothing, is delaying the output of machines of proved worth which are badly needed now and will be needed still more in a few weeks' time when the German aeroplanes return from the Russian front to attend to the R.F.C. during the next big attack by the German army in the West.

The Admiralty is really losing a fine opportunity of proving the worth of the R.N.A.S., for when the push does come the R.F.C. will be exceeding glad of the help of a couple of hundred well-mounted R.N.A.S. pilots, who, even if unsuited by their training for use as scouts over land, would be uncommonly useful in helping to beat off German aeroplanes, a job which needs no technical knowledge or brains, and so can be entrusted to a pilot who is merely brave and a dashing flier, and there are plenty such among the youngsters who have recently

been given R.N.A.S. commissions. But they will not do the job on "sparrows" or "spuds" or any other freaks.

A WARNING FROM THE FIGHTING LINE.

The man among writers who probably knows most about the present doings and immediate needs of the R.F.C. is Mr. Prevost Battersby, now at General Headquarters in France, and writing thence for several London papers. He has been permitted by an unusually sensible or careless Censor to state pretty plainly in a recent article that the R.F.C. needs more aeroplanes and better aeroplanes than it has got. Doubtless out of respect for the censorship he veils his statement under a mass of quite interesting and chatty matter of no particular import, and trims it with a deserved but usual eulogy of the R.F.C. pilots. Also, apparently to avoid being accused of panic-mongering—which is the stigma attached to the bald truth in these days—he writes in a slightly deprecatory tone of the new German machines—omitting somewhat naturally to state that the older type German tractor biplanes which went to Russia were quite good enough to get out of the way of any British machine by merely out-climbing it, and that the same machines with 140 h.p. and 150 h.p. Renzes and Mercs. are likely to be faster as well as better climbers.

Relieved of euphemisms, the following points made by Mr. Battersby are worth quoting:—

"A danger might easily confront us from our disinclination to be rid of the obsolete. One would like to write a eulogy on the scrap-heap in war. It may be a hard saying, but it is better in war, even where there may be a shortage, to scrap everything that has outlived its uses. It is no good clinging to guns that are out-ranged, ships that are out-powered, or planes that are out-speeded. You will save life and lose nothing by being rid of them." Likewise, it is better to scrap silly experiments or brain-wave products that have proved to be no better than machines that already exist. And it is the essence of foolishness to order in quantities machines which have not even been tested—as in the case of that colossal failure the S.E.4—let alone to spend hundreds of pounds and weeks of time in making stampings and metal parts for them, when the time and money could be spent profitably in increasing the output of proved successes.

Writing of the new German machines—with knowledge acquired on the spot—Mr. Battersby says:—"That these machines constitute a new menace is not to be denied. It is possible that by means of them the

Germans may be able to reach England and make themselves mildly disagreeable. They might even prove to be those messengers from heaven for which out here we have been praying, to bring home to our country the realities of war. The new machines are undoubtedly worthy of all the admiration and respect which the French, no mean fliers, have accorded them."

Which, being interpreted, means that we have our job cut out to beat them. We shall not do it unless we set the right way to work.

THE BASIS OF REFORM.

Later, Mr. Battersby says:—"We had to pay for the failure of our rulers to realise the meaning of the new arm, and to establish it at any rate on a sound basis of British manufacture. That we should be yet at the end of our troubles is not to be expected. Fate does not so easily forgive the fool. But if co-operation can be substituted for competition between home manufacturers every week should put us on a more satisfactory footing. Hitherto, in aircraft construction at home every man's hand has been against his neighbour's, which may be well enough in peace time, but in war a different principle has to be followed, and the only competition that can be permitted is emulation in self-sacrifice."

Here we have the germ of a very important idea. Co-operation between manufacturers has been suggested at some length in this paper, but without result, one manufacturer actually writing that his firm was too busy looking after its own business to bother about what other firms did. Which is precisely the same as if one battalion commander said that he was comfortably employed in his trench and was too busy to bother whether the units in adjoining trenches needed his support or not.

Self-organisation or co-operation for patriotic purposes between Englishmen seems impossible in any walk of life. Trades Unions are merely formed to create a corner in labour—as is set forth in one of the articles of the clever series on "Efficient Production," which commences this week. Employers' Associations are merely formed to fight the corner in Labour, and not for mutual help in improving the national output. Engineering Societies are merely formed for self-advertisement or log-rolling purposes, not to increase national efficiency. Almost everyone is for self and very few are concerned about the State. Therefore voluntary co-operation is practically impossible. But something like compulsory co-operation is distinctly a possibility.

ON COMPULSORY CO-OPERATION.

The mere practical men who control the purchase of aircraft for the Navy and Army would do well to take steps immediately to extract the opinions and ideas of practical designers on the subject of producing aeroplanes capable of combating the new German battle aeroplanes.

There are in the employ of various aeroplane constructors a great number of young men who have practical experience of aeroplane design and construction. These men, having worked in some cases for years in aeroplane factories, and having a clear practical knowledge of the designs and methods of various aeroplane makers, are actually possessed of more extended and more workable knowledge of their subject than are any group of scientists and theorists.

There are also in the Royal Naval Air Service and in the Royal Flying Corps officers and men now doing the ordinary work of their Services who have far better ideas and far greater experience of design and construction than any of the civilian "experts" who are wasting the nation's money on fatuous experiments and delaying the work of aeroplane makers by having those experiments carried out.

These men have of late become still more valuable because they have had Service experience, which has taught them what is required in the field or at sea, what are the defects of machines now in use, and, moreover, what are the defects in Service administration and Service routine which cause delays in deliveries of new machines, which mess up the repairing of damaged machines, and which generally cause the Services to be less efficient than they might be.

It would be quite an easy matter to collect these men, a few at a time, and to hold little meetings at which all could talk, argue, and criticise freely. In this way most valuable knowledge could be gained, and when gained it could be applied promptly and effectively to the design of new types and the improvement and acceleration of present designs and output. Incidentally, at any such meeting civilian clothes should be worn, so that the mere civilians should not be overawed by opinions emanating from uniforms.

If anyone in authority is interested in the proposition I can put him in touch in two or three days with a dozen men who will give him more valuable information of this sort in a week than his technical "experts" are

likely to discover in the next year, or the next ten years.

By developing this system properly and applying the knowledge so gained, with the help of a few dozen American factory organisers and staff managers, the output of aeroplanes from existing factories could be quadrupled in three months.

A GENERAL EXPANSION.

The effect on the R.F.C. in particular would be immense. By rights the Flying Corps should be at least a substantive general's command and it should be under a fighting officer with experience of commanding troops in the field with success—say an officer of the calibre of Sir Horace Smith-Dorrien, who is known to be a firm believer in aircraft. Sir David Henderson is perhaps too junior to command such a force, but as chief of Staff or in a semi-technical capacity he should be of the very highest value. In such an event there would be room for brigades of aircraft much on the lines of the artillery brigades of to-day, with brigadier-generals in command, the squadrons of to-day taking the place of batteries.

But without an adequate supply of aeroplanes the full expansion of the R.F.C. to the limits of its usefulness is obviously impossible, and such a supply simply cannot be obtained unless the present haphazard system of production is entirely altered.

A WATCHMAN'S NOTES.

An air-vessel with a monstrous big motor is still keeping me awake after having spoilt a beautiful copybook-like epistle which I happened to be laboriously compiling at 10.40 p.m. to-night (Tuesday, 17th-18th), by causing three terrifying explosions to occur in the immediate vicinity of our abode.

After assisting my elderly relative to a cosy chair at the window and calming her lap-dog, I went out into our field (visitors call it the park) and got my bedroom slippers very damp there. Motor, motor everywhere, but nothing to be seen except bright stars. No silencers were fitted (to the motor, I mean), and I could detect various disagreeable sounds—uneven acceleration, possibly because of a cylinder or two missing, and at times a curious metallic "chinkiness" which would have worried me in a motor-bike engine.

After the Zeppelin, Parseval, or Goliath-plane had passed into the distant wilds about X—, we witnessed a fine display of searchlights, rockets, *et omne hoc*, etc., with hefty explosions which shook us up as much as did the "Irene" bust-up. So I expect some place got it warm. "Caesar's choice" seems a bad one this year.

The "watchman" generally watches in vain for dirigibles. Which is meant as a personal remark, but in a general way is probably equally true.

Zcps, Parsevals, vessels of the city line, or of alphanumerical denomination, and even silvered monarchs with airy-fancy names, all exhibit an almost prudish reluctance to allow the watching eye to rest lovingly on them. When I must satiate my burning thirst for knowledge connive I must with Madame la Guigne and conspire with evil winds. So it happened, as related in the foregoing note, that my very abode was passed over by a ship in the night unseen though watched for, heard and felt.

As no worldly man can disclaim even second-hand knowledge, I passed the following days in attending numerous parties, paying visits where none were due, "pulling up" with countless unattractive souls. Everyone who was awake saw the destroyer—some hardened sinners slept through it all—yet no one could describe it except as a cigar. Asked if it were alight at one end, "No, they thought not."

THE SIMPLE COURSE OF ACTION.

First of all, the civilian "experts" must be abolished, so far as power to interfere with output is concerned. Let them retire to their own corners and experiment with themselves.

If anyone in the Services doubts the wisdom of this advice let him ask what the R.A.F. has produced which is of real value, apart from the B.E.2, designed by Mr. de Havilland, now of the Aircraft Mfg. Co., and the B.E.2c, adapted from it by the late Mr. Busk. And let him ask whether the Admiralty's civilian "experts" have produced any one single solitary thing of any value whatever in something over a year of work.

And then let him think what might be produced by combining the knowledge of the people who have designed and built the best aeroplanes with the Service experience of the best Service pilots.

After which he can think over what would happen if the reproductive methods of the best American factories were turned on to building the results in quantities, in British workshops with the best German machine tools and the best British workmen under picked foremen.

It is all so absolutely simple, and it could all be done for the about the amount of money that is being wasted in the Flying Services to-day.—C. G. G.

One serious-minded householder standing out at his gate as the Zeppelin bore down on them, reports that he shouted to his servant, shivering indoors, to switch on the lights. The order was willingly obeyed, with the result that the enemy helmed to starboard—or was it port?—apparently in a hurry, possibly suspecting a defence battery. There might be something in this, as it is confirmed by the talk of a soldier at the station of one of the places bombed, where the showing of a flare, he said, saved that important position.

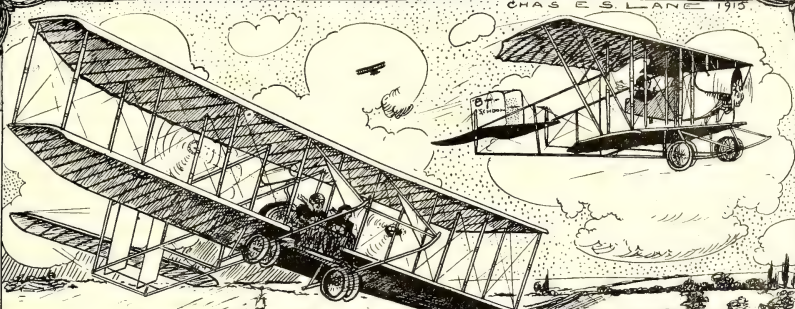
Undoubtedly galvanised roofs and glass-houses as they suggest railways roofs and huts for the Forces are deceptive, and might be employed for that purpose very economically indeed. The former should not be used for temporary hospitals therefore, unless intended for decoys. The erection of decoy-hospitals in places where there is anything of importance might be a good move. They should be a long way, say half a mile, from anything else, to allow for inaccuracy of aim.

Anent this, it is a fact that one V.A.D. hospital, in this district and so placed, only exists now because none of the dozen bombs dropped at it got nearer to its mark than 100 yards. Possibly galvanised iron is preferable to thatch, but a coat of dark paint would bring safety and blessing aesthetic.

One Zep. being stared at by some yokels on a wall actually dissolved into a flock of birds as the unlucky watchman, sure of having at last run across a good thing, pulled up with a gleeful heart to get first-hand impressions. They have such a retiring and evasive nature.

It therefore seems that the mystery about them will only be dissolved when they shall have killed the Censor, or when we shall have destroyed the need for that office by killing all of them off.

While on the subject may I again ask where the silent phantom night-ship "bogeyed" at us all the winter has got to? In the visit we were favoured with—those who saw IT, I did not, and have a grievance—the din of the motors and even the tone of voice thereof was audible for quite an hour. The speed over the land worked out at quite 50. As two places close to each other were treated to fireworks and a watch was available for timing, this was an easy calculation.—T. S. HARVEY.



CHAS. E. LANE 1915

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GREAT BRITAIN.

From the "London Gazette," August 17th, 1915.

WAR OFFICE, August 17th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—The following appointments are made :—

Equipment Officer : Lieut. R. Orme, Spec. Res. and to be temp. Capt. whilst so employed, July 17th.

Asst. Equipment Officers : Sec. Lieut. P. H. Linthune, 10th Lond. R. (Hackney), T.F., June 23rd; Sec. Lieut. A. W. J. Payne, Spec. Res., July 1st; Sec. Lieut. S. L. Dashwood, Hamps. R. E., T.F.; Sec. Lieut. H. A. Oxenham, Spec. Res., July 18th; Sec. Lieut. J. G. Western, Spec. Res.; Sec. Lieut. F. Tedman, Spec. Res.; Sec. Lieut. F. A. G. Noel, Spec. Res., July 30th; Sec. Lieut. H. F. T. Blowey, R.A., and to be Secd., August 3rd.

Flying Officers : Temp. Sec. Lieut. G. E. Harris, 13th Worc. R., and to be transferred to Gen. List : Sec. Lieut. D. A. C. Symington, Spec. Res.; Temp. Sec. Lieut. O. S. Mosley-Leigh, 12th Res. Reg. of Cavy., and to be transferred to Gen. List; Sec. Lieut. W. D. S. Sanday, Spec. Res., August 7th.

* * *

From the "London Gazette," August 18th, 1915.

WAR OFFICE, August 18th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—The following appointments are made :—

Flying Officers to be Flight Commanders : Lieut. D. L. Allen, R.I. Fus., and to be temp. Capt. whilst so employed; Capt. J. H. A. Landon, 4th (T.) Essex R.; Capt. F. W. Smith, 2nd S. Midland Brig., R.F.A., T.F., August 5th; Lieut. the Hon. W. F. F. Sempill (Master of Sempill), Sp. Res., and to be temp. Capt. whilst so employed, August 6th.

Flying Officer : Lieut. C. Cooper, Queen's (R. W. Surr. R.), Supply. List, July 26th.

* * *

From the "London Gazette," August 19th, 1915.

WAR OFFICE, August 19th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—CENTRAL FLYING SCHOOL.—The following appointment is made :—

Officer in Charge of the Experimental Flight : Graded for purpose of pay as a Squadron Commr : Capt. G. B. Stopford, R.A., a Flight Commr., Military Wing, August 6th.

* * *

From the "London Gazette," August 20th, 1915.

WAR OFFICE, August 20th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—Name of Sec. Lieut. G. E. W. Humphrey, Sp. Res., is as now described, and not as stated in "Gazette" of July 29th.

* * *

From the "London Gazette," August 21st, 1915.

WAR OFFICE, August 21st.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—The following appointments are made :—

Asst. Equipment Officer : Sec. Lieut. W. J. B. Curtis, S.R., June 1st.

Flying Officer : Sec. Lieut. C. A. Ridley, R. Fus. (City of Lond. R.), and to be sec'd., August 7th.

* * *

From the "London Gazette," August 23rd, 1915.

WAR OFFICE, August 23rd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS—MILITARY WING.—The following appointments are made :—

Flying Officers to be Flight Commanders : Lieut. (Hon. Capt.) G. B. Rickards, Spec. Res., and to be temp. Capt. whilst so employed, August 11th; Capt. B. Blood, 4th

Hussars; Lieut. H. de Havilland, Spec. Res., and to be temp. Capt. whilst so employed; Lieut. O. G. W. G. Lywood, Norf. R., and to be temp. Capt. whilst so employed; Lieut. E. L. M. L. Gower, Spec. Res., and to be temp. Capt. whilst so employed, August 22nd.

Flying Officers.—Temp. Lieut. F. Bellamy, 16th (Res.) Durh. L.L., and to be transferred to Gen. List; Sec. Lieut. (on prob.) C. R. Bertram, King Edward's Horse; Sec. Lieut. E. H. Colman, Spec. Res.; Sec. Lieut. W. E. Somervell, Loyal N. Lan. R., and to be sec'd.; Sec. Lieut. A. Lees, R. W. Kent R., and to be sec'd., August 6th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in their rank : W. J. B. Curtis, R. H. Carr, F. Dunn, E. R. Scholefield, E. H. Coleman, G. E. H. Fincham, H. A. Cooper.

R. W. Nichol to be Sec. Lieut. (on prob.), July 5th.

NAVAL.

The following appointments were notified at the Admiralty on August 17th :—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows, and appointed to the "President," additional, for R.N.A.S. :—C. N. Geale and C. MacLaurin, of July 21st; and E. T. Bradley, of August 21st.

* * *

The following appointments were notified at the Admiralty on August 20th :—

ROYAL NAVAL AIR SERVICE.—Squadron Commander : J. D. Mackworth, to the "President," additional, for duty in Air Department (August 5th).

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of August 19th, and appointed to the "President," additional, and R.N.A.S. :—W. E. C. Parry, A. Sparrow, and S. E. Taylor.

* * *

The following appointments were notified at the Admiralty on August 21st :—

ROYAL NAVAL AIR SERVICE.—Temporary Flight Sub-Lieutenant : J. D. Newberry, transferred to permanent list of R.N.A.S. (August 10th).

* * *

The following appointments were notified at the Admiralty on August 23rd :—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows, and all appointed to the "President," additional, for R.N.A.S. :—E. L. Pralle and H. G. Holden, both of August 16th, and A. P. Hann, of August 21st.

* * *

Flight Lieut. Kenneth F. Watson, R.N., who was reported officially as "missing, now presumed to have lost his life," in the last issue of this paper, was an old Sedburgh boy, 22 years of age, and the younger son of Mr. J. Falshaw Watson, the Leeds consulting engineer. His elder brother, Captain Graham Watson, is with the 7th Batt. Leeds Rifles now at the front. After leaving Sedburgh, he had three years at Magdalene College, Cambridge, and occasionally played for the 'Varsity against the Harlequins, but it was not until he joined Headingly that his real talent as a three-quarter was made manifest. He played for the North against the South Africans, and in the last season of Rugby football was one of the most successful players in the Yorkshire County team.

At the outbreak of war he joined the R.N.A.S., and obtained his brevet at Hendon. He had been stationed for some months in the Mediterranean, and on the 3rd inst. left his base on patrol duty. He did not return, and no further tidings have been received.

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The following appeared in the births column on August 23rd :—

ROACH-PEARSON.—On the 14th Aug., at "Turley," Geelong, Australia, the wife of Flight Sub-Lieut. P. Roach-Pierson, R.N., a daughter.

* * *

A marriage has been arranged between Flight Sub-Lieut. Arthur Neville Mansergh, R.N.A.S., third son of St. George Dyson Mansergh, Old Court, Waterford, and grandson of the late Charles Carden Mansergh, of Clifford, Co. Cork, formerly 3rd Dragon Guards, and Helen, only surviving daughter of Lieutenant-Colonel Tribe, late Leinster Regiment and Army Ordnance Department, and Mrs. Tribe, Birr, King's County, Ireland.

* * *

An officer, R.N.V.R., serving in a "monitor" which assisted in the destruction of the "Königsberg," writes home describing the event. *Apropos* aircraft, he makes the following reference :—

"We had no sooner anchored and laid the guns than the aeroplane signalled she was ready to spot. Our first four salvoes, at about one minute interval, were all signalled as 'Did not observe fall of shot.' We came down 400, then another 400, and more to the left. The next was spotted as 200 yards over and about 200 to the right. The next 150 short and 100 to the left. The necessary orders were sent to the guns, and at the seventh salvo we hit with one and were just over with the other. We hit eight times in the next 12 shots! It was frightfully exciting.

"The 'Königsberg' was now firing salvoes of three only. The aeroplane signalled all hits were forward—so we came a little left to get her amidships. The machine suddenly signalled 'Am hit; coming down; send a boat.' And there she was, about half way between us and the 'Königsberg,' planing down. As they fell they continued to signal our shots, for we, of course, kept on firing. The aeroplane fell in the water about 150 yards from the 'Mersey' and turned a somersault; one man was thrown clear, but the other had a struggle to get free. Finally

both got away and were swimming for 10 minutes before the 'Mersey's' motor-boat reached them—beating ours by a short head. They were uninjured and as merry as crickets!"

* * *

A C.P.O. of the Armoured Car Support writing from Gallipoli says :—

"We get frequent visits from a German biplane (Mercedes engine) which I think is an Aviatik or Albatros. We have several parasol Moranes to chase it away, in addition to a Sopwith or Martinsyde scout. The scout did a couple of loops over the trenches about a month ago. There is a Maurice and an Aviatik over us now. Damn it! There's bomb number one (with the Turk's compliments) about 20 yards away."

MILITARY.

A supplement to the "London Gazette," issued on August 23rd, announces that the King has been graciously pleased to award the Victoria Cross to the following officer in recognition of most conspicuous bravery and devotion to duty in the field :—

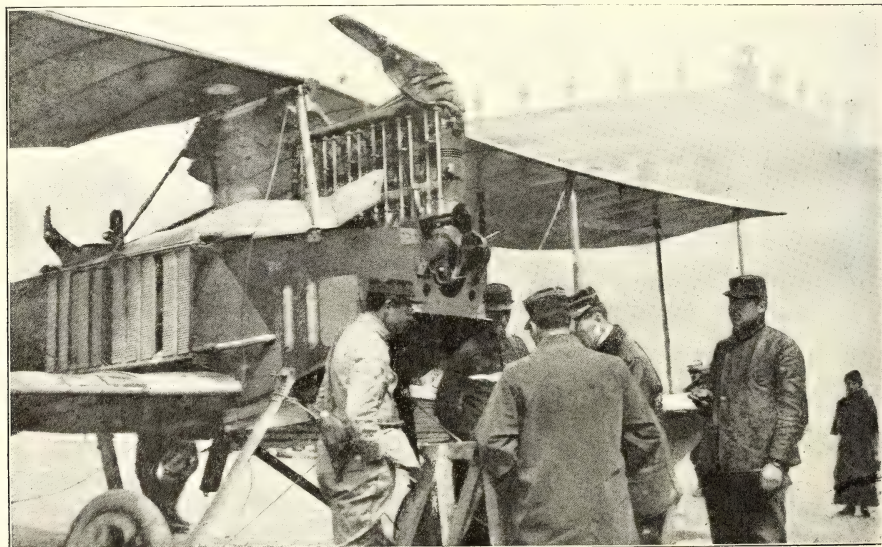
CAPT. JOHN AIDAN LIDDELL.

3rd Bn., Argyll and Sutherland Highlanders, and Royal Flying Corps.

For most conspicuous bravery and devotion to duty on July 31st, 1915.

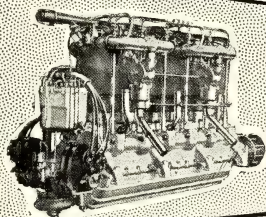
When on a flying reconnaissance over Ostend-Bruges-Ghent he was severely wounded (his right thigh being broken), which caused momentary unconsciousness, but by a great effort he recovered partial control after his machine had dropped nearly 3,000 feet, and notwithstanding his collapsed state succeeded, although continually fired at, in completing his course, and brought the aeroplane into our lines—half an hour after he had been wounded.

The difficulties experienced by this officer in saving his machine, and the life of his observer, cannot be readily expressed, but as the control wheel and throttle control were smashed, and also one of the under-carriage struts,

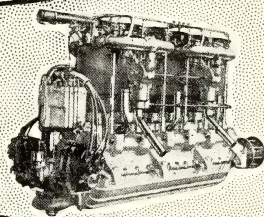


An Albatros biplane on view in Nancy. Note the curious breakage in the engine.

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it would seem incredible that he could have accomplished his task.

[Without in any way belittling Captain Liddell's magnificent performance, one would like to have an explanation of why he gets a V.C., while Captain Borton got a D.S.O., and Lieut. Acland got nothing at all, for almost precisely similar acts of pluck, bravery, and presence of mind? Also, whether the D.S.O. or the V.C. is considered the greater honour?—Ed.]

The following casualty in the Indian Forces was officially reported on August 22nd:—

EXPEDITIONARY FORCE.

Previously reported Missing, now reported Prisoner.

Hankin, Lieut. H. M., Queen's Own Corps of Guides, att'd. R.F.C.

The following casualties among officers in the Expeditionary Force were reported on August 23rd, under date August 17th:—

MISSING.

Drury, Sec. Lieut. D. D., Royal Flying Corps.
Maclean, Sec. Lieut. W. A., 1st Black Watch, att'd. Royal Flying Corps.

The following casualties were reported from the Persian Gulf on August 23rd—undated:—

MISSING, BELIEVED KILLED.

Burn, Lieut. W. W. A., Royal Flying Corps.
Merz, Lieut. G. P., Royal Flying Corps.
[Lieuts. Burn and Merz were officers of the Australian Flying Corps, lent to the Indian Army, as duly recorded some weeks ago. Mr. Burn will be remembered as a pupil at the Bristol School on Salisbury Plain, and Mr. Merz as learning at the Werribee School at Point Cook under Captain Petre. The machines the Australians were to use were to be lent by the Indian Army, and one is inclined to wonder whether the disappearance of these officers is due to the failure of an aeroplane affected by the Indian climate, and further deteriorated by the climate of the Persian Gulf. It would be more satisfactory if one knew whether they were served out with new machines in Persia.—Ed.]

An Army Order issued on August 23rd states that a badge consisting of the letter "O" and an outspread wing has been approved for wear by officers who are on the list of qualified observers of the Royal Flying Corps.

The badge will be worn on the left breast above medal ribbons in the same manner as the flying badge is worn by qualified pilots.

[It was about time that such a badge was issued, for the observer needs far greater courage, and courage of a more unusual kind, than that of any pilot.—Ed.]

An engagement is announced between Major G. I. Carmichael, D.S.O., Squadron Commander Royal Flying Corps, and Kathleen Mary, youngest daughter of Mr. and Mrs. W. Casterton Smelt, of Braeside, Rosslyn Hill, Hampstead.

On August 18th the King, the Queen and Princess Mary visited South Farnborough. During a stay of some hours they visited the Royal Aircraft Factory and viewed flying by the Factory test pilots and by officers of the R.F.C.

It is reported that on August 17th an accident occurred to a military biplane. It appears that the pilot was flying in the neighbourhood of Hounslow when it became necessary to land, but the machine collided with a house. The officer, whose name is given as Lieut. A. C. Wilson, was severely injured, both his legs being broken. One wishes him an early recovery and hopes that he is not the pilot to

whom reference was made in this paper lately as flying over the houses about 150 feet up.

Examiners and viewers are required for the inspection of aeroplanes in the Aeronautical Inspection Department. Applicants should possess a knowledge of the use of measuring tools, and workshop experience is of value. Those already on Government work should not apply. Preference is given to those ineligible for military service.

This employment offers an unequalled opportunity, to gentlemen having the necessary qualifications, of serving their country. Examiners are paid a commencing rate of £3 14s. per week; viewers are paid less.

Candidates should apply by letter to the Aeroplane Inspector, Aeronautical Inspection Department, South Farnborough, Hants.

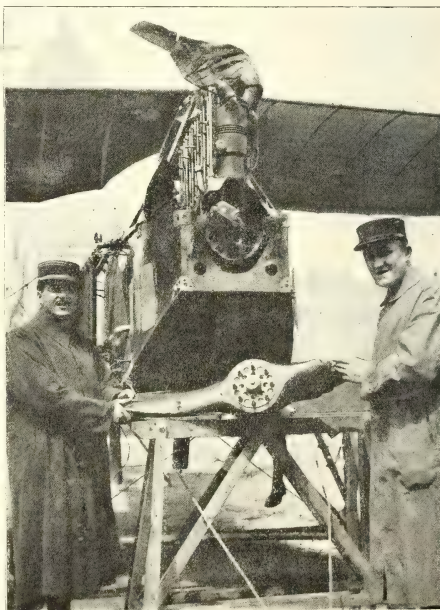
FRANCE.

The communiqué of August 23rd says:—

During August 22nd our aeroplanes bombarded the railway stations of Lens, Henin-Lietard, and Loos, and the railway from Lille to Douai.

It was reported from Paris on August 23rd that the capital had received a welcome surprise visit that morning from the aviator Gilbert. On June 27th, M. Gilbert, with a second aviator, had successfully dropped bombs on a German town near the Rhine. On the return journey his motor failed, and he was compelled to alight on Swiss territory, where he was interned near Andermatt, in prison, as he had refused to give his parole. He has escaped by means which are not made public, and arrived on the 23rd in Paris, where he was received at once by General Hirschauer, Director of Military Aeronautics.

It is good news to learn that the Adjudant-aviateur Louis Noel has at last achieved his long desired wish to strafe a German aeroplane.



A front view of the same curious breakage, and of the propeller.



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On February 27th, at Ithaca, N.Y., a Thomas Tractor Biplane climbed 4000 ft. in 10 minutes, carrying pilot, 4 hours' fuel, and ballast equivalent to $3\frac{1}{2}$ cwt. of Bombs.

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TELEPHONE -1696 BROMLEY.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

A member of his escadrille writing home recently stated that the event occurred about a fortnight ago, and describes what happened as follows:—"Louis pursued a Boche and compelled him to land in a hurry. He dived after him and finally found himself in unknown country (escadrilles have presumably only maps of their bit of front) at a very perilous height over the Boche, which was diving yet lower over the trenches, and knowing the habits of the beast made a 'demi-tour' and came home, his observer, a fine little infantry lieutenant, who has been twice wounded in the trenches, reporting that the Boche had been compelled to land in German territory opposite to the village of X—."

"Two days later we saw in the communiqué that a Boche was brought down by artillery and had landed between the lines close to X—, the occupants escaping."

"Then we heard the 'bus was on view on the Place Stanislas at Nancy, and we went over to investigate and found an Albatros untouched by artillery but with two bullet holes in the radiator and inlet valve (pipe?) respectively, but it was too late to open any inquiry, though the 'bus was evidently Noel's."

"The hélice had come clean away in the air with a portion of the crank-case and was found three miles from the 'bus! A great pity the pilot got away as he must have been pretty useful."

"Luckily for Louis the trenches were two miles apart, and there was a thickish mist. I fancy the motor gripped and something had to wreck, but Louis says the Boche evidently felt something wrong when his inlet pipe went, and cut off, and then finding he was landing short, switched on again and the shock did it."

GERMANY.

The communiqué of August 23rd says:—

Near Wavrin, south-west of Lille, an English aeroplane was shot down.—Reuter.

* * *

The story of a wreath that was delivered by aeroplane is told in a letter from a German officer in the Argonne, published by the "Frankfurter Zeitung."

Recently, the officer states, a French aviator was brought down by rifle fire in this region. On landing he was so severely injured that he died in hospital, and was buried in a village.

A German aviator set out on a risky flight with a loaded letter over the French lines, to inform the enemy of the facts and the exact place where the Frenchman was buried.

The letter reached its destination, for on the following day a French aviator, flying very low and in spite of the constant artillery and rifle fire, swooped down above the grave of his comrade and dropped a magnificent wreath of flowers within a hundred yards of the tomb.

The wreath was placed by German soldiers on the grave, and the French pilot escaped uninjured.

[It is pleasing to see that the same chivalrous relations obtain between the French and German aviation services as between the British and German. One gathers that both sides are most punctilious in giving one another news of casualties.—Ed.]

RUSSIA.

The communiqué of August 22nd says:—

There has been no direct news from Novo Georgievsk since August 20th. The latest information, however, furnished by our aviators shows that, towards night-fall on Friday, the situation of the fortress had become so difficult that there is no reason to hope for further resistance on the part of the garrison.

* * *

A message from Petrograd on August 23rd says that, according to refugees from Kovno, three Zeppelins and over thirty aeroplanes flew over the fortress, dropping bombs.

* * *

It is reported unofficially that a German airship ap-

proaching Vilna has been brought down by Russian fire. The report states that it had on board an officer, an engineer, eight soldiers, photographic apparatus, a small machine-gun, and ten explosive and a quantity of incendiary bombs. The airship was damaged in four places. The crew were placed under arrest.

[Judging from this account the airship was a Parseval or a Gross, and not a Zeppelin, as stated in many papers. A Zeppelin usually carries about 20 men.—Ed.]

ITALY.

The communiqué of August 19th says:—

The enemy displays increasing activity in the use of aeroplanes for reconnoitring and offensive purposes. Our aviators, who by their continual daring exploits have contributed so greatly to the successful progress of our operations, constitute, in conjunction with our anti-aircraft artillery, an effective defence against the enemy's efforts.

* * *

An official report from Rome about August 21st says:—

In the early morning of the 20th an aeroplane squadron raided the enemy's aviation camp at Raunizza, to the east of Gorizia, firing upon it for thirty consecutive minutes, with splendid results. Notwithstanding the fire from the enemy's anti-aircraft batteries, our aeroplanes returned absolutely undamaged.

A "Drachen," or kite balloon, being sighted during the return journey, it was successfully brought down by the fire from our aeroplanes' Maxims, while operations from our intrepid and fortunate aircraft were continued against military objectives in perfect and correct conformity to all laws and usages of war.

A punitive raid was carried out by the enemy's aircraft during the afternoon of the same day over the town of Udine, where fourteen bombs fell, resulting in the death of five civilians (including a woman and a little girl) and three carabinieri. Some damage has also been reported to private buildings.

* * *

The communiqué of August 22nd says:—

Yesterday morning we repeated our raid on the enemy Aerodrome at Aisowitz, on which we dropped 60 bombs, causing havoc. Our daring flying squadron, although heavily fired on by anti-aircraft guns, returned in safety.—CADORNA.

* * *

On the 13th inst. an escadrille of the French Flying Service at full strength passed through Turin *en route* "for a destination assigned to it." No doubt not far from the land where the Crescent is setting. The unit consisted of 28 soldiers under the command of a capitaine, three other officer-aviators, and five N.C.O.'s, and had entrained at Lyon. The French flying men naturally evoked much courteous attention, and also, *on dit*, their blue uniforms were much admired as they hurriedly did the sights of the city.

* * *

The I.A.E.C. communicate the receipt of another £400 for military pupil-pilots, the gift to be divided into sums of £40 and put at the disposition of the flying schools as bonus awards to their quickest pupils. This is the fifth handsome donation made to the club in the month for patriotic purposes. Richer countries, please copy.—T. S. HARVEY.

AUSTRIA.

The communiqué of August 21st says:—

One of our air squadrons dropped bombs and fire-arrows on Udine. All our aeropl^{ns} returned safely.

* * *

According to the Berlin "Lokalanzeiger," during the birthday of the Austrian Emperor a Russian aviator dropped bombs on Czernowitz. Two Austrian aviators chased the Russian, who escaped. Subsequently several



[Reprinted from "Flight," August 20th, 1915.]

"What might have happened if the glass had not been 'Triplex Safety.'—The above photograph shows an Auster wind-screen on a Crossley car, attached to the Royal Flying Corps. A shrapnel shell exploded fairly close to the car, and it will be noticed that the glass in question was struck by eight shrapnel bullets and yet only one penetrated the glass, and that one only just got through. The glass is still perfectly rigid and strong, and, except for one small hole, sufficiently sound to continue its work for an indefinite period. A remarkable object lesson generally, and particularly to all those concerned with seeing after the safety of the men concerned in this war."

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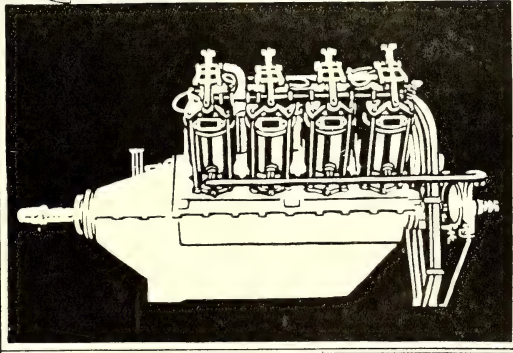
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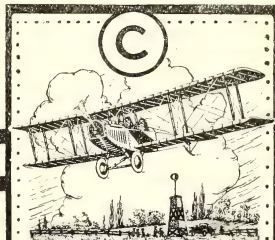
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Austrian aviators dropped flowers on Czernowitz as a consolation.

TURKEY.

It is reported from Mytilene that on August 12th a naval aviator flew over the Straits and dropped a heavy bomb on a Turkish transport. The resulting explosion split up the transport, which sunk, with, it is believed, all the troops on board. It is understood that the officer who accomplished this feat was Squadron Commander F. H. K. Edmonds, R.N., D.S.O., who won his distinction in the Cuxhaven raid.

* * *

A telegram from the Bucharest correspondent of the Fournier Agency on August 23rd says :—

"I understand from an excellent private source that the recent fires at Constantinople, which destroyed nearly 3,000 houses, were caused, not by accidental causes, as was stated at the time, but by bombs dropped from two Russian aeroplanes.

"Another Russian aeroplane on the same day bombarded Scutari, causing a large number of fires and destroying the town hall."

[Some bombs!—Ed.]

DENMARK.

A message from Copenhagen dated August 20th states that several large German cruisers of the newest type were reported to be steaming north in international waters near Saltholm. They were evidently in wireless communication with a Zeppelin which was seen in the vicinity.

* * *

It is reported from Copenhagen that soon after the stranding of the British submarine E13 a Zeppelin visited the spot and inspected the scene of the wreck from a low altitude, presumably for the purpose of obtaining evidence for an exchange of Notes with Denmark concerning the alleged breach of neutrality.

* * *

A message from Copenhagen on August 23rd says that

a German seaplane was damaged on the 22nd near the Island of Fanø. During the night it was driven to the west side of the Island of Manø, where an attempt was made to repair the damage. If the machine was not able to leave within 24 hours it was to be seized by the Danish authorities and the pilot interned.

[If a seaplane is allowed 24 hours in which to get away, why is not any other aeroplane allowed the same grace? In the case of Flight-Lieut. Murray, R.N., the Dutch made no such offer, though he was brought in on a seaplane.—Ed.]

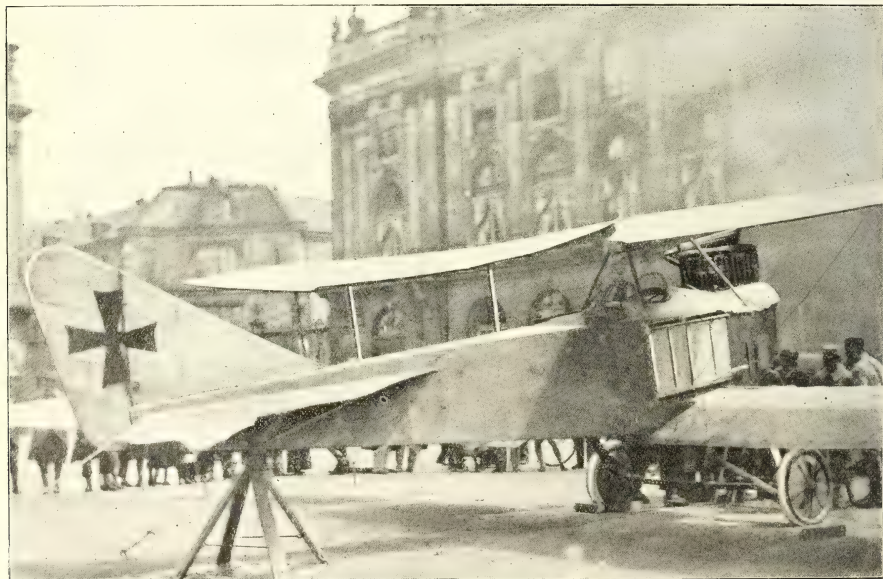
BELGIUM.

Mr. G. F. Steward, the "Daily News" correspondent at Rotterdam, reported on August 23rd that a message from the Zeeland—Flanders frontier, stated that aeroplanes, both British and German, took part in the recent affair while the coast batteries were replying to the heavy fire of the fleet, and that five aviators were engaged in combat. Three were German and two British, the latter acting as fire regulators and scouts for the Fleet. For a time these were compelled to perform the dual task of keeping the Fleet informed of the effects of the fire and beating off the defending German machines, two of which had been sent up to engage the Allies' aviators, and the third to scout over the sea. During this engagement one aviator is believed to have fallen, but it is as yet unknown whether he was German or English.

HOLLAND.

The special correspondent of the "Daily Telegraph" writing from Rotterdam on August 18th says :—

Early this morning three airships were seen from Vlieland manœuvring about and finally disappearing in an easterly direction. Later occurred the apparently intentional breach of neutrality already referred to. Zeppelin L.10 crossed Vlieland and the Zuyder Zee. Dutch sentries fired warning shots, but no notice was taken. Thereupon the Dutch opened fire with both guns and rifles in the fulfilment of duty against an intruder on Dutch territory. Despite this fire, however, the Zeppelin cruised about for



Rear view of the captured Albatros at Nancy, brought down by the Adjudant Noël.

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an hour, eventually disappearing between the islands of Vlieland and Terschelling. Shortly afterwards there was picked up on the shore a peculiar object shaped like a ship's buoy, concealing a hermetically sealed tube containing dynamite.

FEDERATED MALAY STATES.

The Colonial Secretary announces that additional funds (£1,300 in each case) have now been received and gratefully accepted by the Army Council for the purchase of two aeroplanes as under, for the use of the Royal Flying Corps:—

The Malaya II.—Presented by the residents of Kinta, Perak.

The Malaya III.—Presented by Mr. C. Alma Baker, Kinta, Perak.

The machine previously presented by Mr. Eu Tong Sen, of the Federated Malay States, is known as the Malaya I.

RHODESIA.

The British South Africa Company states that a cable message has been received from Salisbury requesting the British South Africa Company to pay a further sum of £1,500 over to the Imperial Government for the purchase of a 70-h.p. Renault aeroplane or other similar machine, as a gift from the people of Rhodesia, for the use of the Royal Flying Corps. The aeroplane is to bear the name "Rhodesia No. 2."

U. S. A.

A notable flight was made recently by Messrs. Frank Burnside and Fred Roberts at Ithaca, N.Y., on a Thomas tractor biplane fitted with a 100-h.p. Aeromarine motor. During a flight of thirty minutes' duration an altitude of 6,000 feet was reached. The engine must have been pulling well to have made such a rapid and sustained climb possible.

* * *

The American "Aerial Age" publishes the following interesting statement, the accuracy of which, of course, cannot be guaranteed:—

"The White Star liner 'Arabic' sailed for Liverpool on July 28th with 16,000 tons of cargo for the British War Department. It included 125 motor trucks and 110 aeroplanes packed in cases 40 feet long, 10 feet wide, and 5 feet deep, which were all lashed down on the ship's decks fore and aft.

"The superstructure of the 'Arabic' was painted navy gray and sandbags were piled three feet high around the wheel-house in the stern in case of the ship being shelled by a submarine. The most conspicuous objects on the liner when she steamed away were the big white packing cases containing the aeroplanes on her decks."

* * *

Two American records were broken on August 10th over Buffalo and Niagara, on a 160-h.p. military type Curtiss tractor biplane. The first flight was made by Mr. Morris of the Curtiss Co., carrying two passengers, and he reached 8,200 ft. in 27 mins. The descent took 5½ mins.

Three passengers were taken in the second flight, the total live load being 800 lbs. The barograph ceased to operate at 8,300 feet, and after climbing for another five minutes the pilot came down.

Lieut. McIlvain intends to attempt to beat the world's height record on this machine, which is, of course, held at present by Herr Oelerich, who reached 25,275 feet on a D.F.W. biplane shortly before the outbreak of war.

* * *

The new company, formed by the Thomas Bros., to manufacture their new aero engines on a large scale, is hard at work getting into shape. The "incorporators" are Messrs. W. T. Thomas, and E. B. Cresswell, of Ithaca, N.Y., Harold N. Bliss, George H. Abel, and Raymond Ware, of Boston, Mass.

The "Aerial Age" says that the new Thomas Aero-

motor Co. starts out with every qualification for producing a motor which should prove capable of meeting the increasingly severe conditions of aeronautical service.

The construction of the first lot of these motors is well under way, and plans are completed for the production in large quantities. The general idea is to turn out a compact, light-weight V-type motor of 150 to 180 h.p., operating at speeds of 2,000 to 2,500 r.p.m., any desired propeller speed being obtained by gear reduction, as in the well-known British "Sunbeam" motors. These high speeds have been made possible by the employment of large valves, exceptionally light pistons of a special alloy, and connecting rods machined all over from forgings having an elastic limit of 280,000 lbs.

Naturally the engines are primarily intended for Thomas tractor machines, but the designers have not lost sight of their equal adaptability to the pusher type. Provision has also been made to take care of counter-clockwise driven crankshaft, to provide for installation in twin tractors or pushers of the latest type war planes in use abroad.

The Thomas motor is equipped to meet all military requirements with the latest accessories, such as a self-starter, wireless drive, tachometer, etc. The first lot of motors will be coming through about September 1st.

PERSIA.

The following account of flying in Persia is taken from an Australian paper:—

"I flew over the Garden of Eden, too, according to what I am told by the people here," says Lieut. Harold Treloar, of the Australian Flying Corps, writing on June 3rd.

"Everything is 'O.K.," writes Lieut. Treloar. "We have two Maurice Farman fighting biplanes going, and I have been over the Turkish lines at Kurna, acting as pilot and observer. We fly at 5,000 feet, so, if they hit us, good luck to them. These machines carry a passenger and fuel for four hours, and do a little less than 60 miles an hour ground speed. We have dropped bombs, but with little success. But we have done some good reconnaissance, locating trenches, guns, and so forth.

"It is fearfully hot, about 110 to 120 degrees in the shade, and when there is no breeze it is simply a real Turkish bath. I was the first Australian member of the Australian Flying Corps to fly over the enemy's lines, and also the first Australian to fly in this country. All our corps are well and standing the heat well."

[See reference to the Indian machines under announcement of presumed deaths of Lieuts. Burn and Merz.—Ed.]

AUSTRALIA.

The following officers, having successfully passed through a course of instruction at the Central Flying School, Werribee, will be appointed to the Australian Flying Corps and the Flying Corps Reserve, as follows:—2nd Lieut. R. F. Galloway, 25th Signal Company, A.E., to the Australian F.C.; 2nd Lieut. A. M. Jones, 46th Infantry, to the Australian F.C.; Lieut. V. Hall, Intelligence Section, General Staff, to the F.C. Reserve, class A; 2nd Lieut. L. E. Cooke, 23rd Fortress Company, A.E., to the F.C. Reserve, class A; Lieut. H. D. E. Ralfe, R.A.G.A., to the F.C. Reserve, class A; Lieut. W. Sheldon, R.A.F.A., to the F.C. Reserve, class A; 2nd Lieut. E. L. Simonson, Melbourne University Rifles, to the F.C. Reserve, class A.

A WAR BABY.

The "Daily Chronicle" states that a "baby Zeppelin" has been seen with its mother over the North Sea. It is reputed that the "baby" is being dry fed by wireless from Friedrichshafen. Mother and child are said to be doing well, but the whereabouts of the father is unknown. The location of the British Naval Airships is always censored.

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THE INVASIONS OF ENGLAND.

The following official announcement was made on August 18th:—

Zeppelins visited the Eastern Counties last night and dropped bombs.

Anti-aircraft guns were in action, and it is believed that one Zeppelin was hit. Air patrols were active, but owing to the difficult atmospheric conditions the Zeppelins were able to escape.

Some houses and other buildings, including a church, were damaged.

The following casualties have been reported:—

Killed: 7 men, 2 women, 1 child.

Injured: 15 men, 18 women, 3 children.

All the above were civilians.

* * *

A delayed telegram via Rotterdam from Ameland states that on Tuesday evening, August 17th, three Zeppelins passed overhead travelling in a westerly direction. On the following morning only two were seen making the return journey. Of course, the report may be false, or the incident may bear no relation to the recent raid.

If the Germans know, and doubtless they do, the net result of the recent raid, they cannot feel they have got very much change out of their airship investment.

On the morning after one of the most recent visitations the body of a little girl, killed in her sleep, lay in the local mortuary in her nightdress still clasping in her arms her cherished doll.

* * *

The "Lancet" says:—

During one of the recent air raids on the East Coast a well-known surgeon was performing the operation of tracheotomy at a nursing home when the German aircraft came over the place at night. The town electric current was at once cut off. All the lights went out suddenly, and this, too, at the very moment when the surgeon in question was opening the windpipe.

Fortunately, it was not the first attack delivered against this place, a fishing and sea-bathing resort. Taught by experience the operator had made it a matter of habit to warn his nurses and other assistants that lamps should be kept ready for use during all operations which had to be undertaken at night. This precaution may have saved the small patient's life. With but a trifling delay the tracheotomy was completed and the child is now doing well.

* * *

German newspapers contain the wildest speculations, and sometimes details designed to give verisimilitude to obvious fictions. A delightful example of the latter method is contained in the following from the "Deutsche Tageszeitung": "Travellers from London report that the last Zeppelin attack on Harwich effected very heavy damage, the extent of which has been kept secret. At Landguard Fort such a heavy explosion occurred that it cannot be in direct connection with the bomb throwing by the Zeppelins, but was the indirect result, as such confusion and excitement followed the bomb-throwing that many of the guards left, and a catastrophe occurred in consequence. The number of dead is not yet known, but it is certainly very large, as thirteen badly wounded soldiers were admitted to the military hospital. One bomb fell into the post-office and caused serious damage. A great number of post-bags caught fire, and many mail-packages were destroyed by fire or water. Postal communication with Harwich has not yet been fully restored. The English post for Holland during the last few days has nearly all failed to arrive." Which, for all the British papers are permitted by the Censor to tell us, might be true. Really the Censorship is becoming ridiculous. Surely any German pilot could tell whether he was north, south, east, or west of London, and whether he was over Harwich, Yarmouth, or Cromer.

THE DEATH OF A PIONEER.

It is reported from Sydney that Mr. Lawrence Hargreaves, who was one of the great pioneers of aviation, died about six weeks ago at his home at Woollahra, Sydney, aged 65 years. For 30 years he worked steadily on problems of aerial engineering, and many of his discoveries were used as foundations by others who have become famous.

He offered his original models some years ago to the Australian Government, but was told that there was no room for them. Similar indifference was shown in England, so Mr. Hargreaves presented them to Germany. They are now in the Deutsche Museum at Munich, and it is possible that the Taube monoplane owes something of its design to his models.

He was best known in connection with man-lifting kites, but in this direction, also, his efforts and offers were despised by Governmental ineptitude. When one thinks of the continued neglect to use the knowledge acquired by men like José Weiss and Horatio Phillips, both happily still living, and of the late Lawrence Hargreaves, one begins to see why this country is always beaten till absolutely forced into a corner.

A NOTABLE AUSTRALIAN.

An Australian paper says:—

"Among Australian aviators upon whom the war has conferred distinction is Mr. William Stutt. The son of the late William Stutt, formerly a member of the Legislative Assembly, he was born at Hawthorn, and is 25 years of age. Mr. Stutt left Australia in October, 1913, and secured a position with the British and Colonial Aeroplane Company. When war broke out he was released by the Government in order that his services might be utilised as a flight instructor to military officers. At least 150, many of whom are now at the front, have passed through his hands. He is now employed testing machines in the Royal Aircraft Factory.

"The aeroplane in which Mr. Stutt is seated [in a photograph pertaining to the article—Ed.] is the latest type of B.E.2c tractor biplane. It is now doing excellent work at the front, being faster and better than the German Taube."

[Apropos the last remark, which is perfectly true, one must point out that, although the Antoinette was faster and better than the original Voisin box-kite, no one would look at an Antoinette these days. The Taube is obsolete, and it is therefore idle to point out that the B.E.2c is better and faster than a Taube. A comparison of its merits and demerits with those of a modern German biplane is much more instructive.

Apart from this, however, Mr. Stutt is one of the most able pilots in this country and is well fitted to take his place alongside such great Australian pilots as Mr. Bussted and Mr. Hawker. Not only is he notable for his skill, but his unflinching good nature makes him a favourite wherever he may be, and it is rumoured that even at the R.A.F. his ability and affability are slowly being recognised.—Ed.]

THE BEARDMORE AERO ENGINE.

In the last issue of this paper the illustrations of the Beardmore aero engine were labelled "The Austro-Daimler Engine." It will be remembered that the original of the Beardmore engine was the Austro-Daimler which came here in the dim past when there was peace in the land. Now, however, various detail designs have been altered and although the engine operates on the same general principle it is quite fair to call it the Beardmore aero engine and to forget that its ancestor of a generation or two back was an alien enemy.

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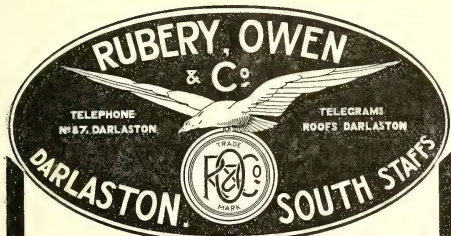
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BY ANGLO-AMERICAN.

[The following articles have been written by a British engineer, who, after serving his time in this country, worked for several years on the other side of the Atlantic, where he had exceptional opportunities of comparing the systems of the two hemispheres and of seeing the running of big factories both from the workman's and the boss's point of view. Though his sympathies are largely with the men, he sees their faults and points them out without fear or favour. In a long experience of workshops, and of mixed reading, I have never seen the inner workings of the labour and capital question so truly and graphically set forth. I hope, therefore, that employers, employees, and Government inspectors alike may profit by these articles, and learn to understand one another somewhat better.—EDITOR, THE AEROPLANE.]

THE THINKER.

(WITH ACKNOWLEDGMENT TO THE "FORD TIMES.")

Back of the beating hammer

By which the steel is wrought,
Back of the workshop's clamour,
The seeker may find the Thought,
The Thought that is ever master
Of iron and steam and steel,
That rises above disaster,
And tramples it under heel.

The drudge may fret and tinker

Or labour with lusty blows,
But back of him stands the Thinker,
The clear-eyed man who knows;
For into each plough or sabre,
Each piece and part and whole,
Must go the brains of labour,
Which gives the work a soul.

Back of the motor's humming,

Back of the bells that sing,
Back of the hammer's drumming,
Back of the cranes that swing,
There is the Eye which scans them,
Watching thro' stress and strain,
There is the mind which plans them—
Back of the brawn, the Brain.

Might of the roaring boiler,

Force of the engine's thrust,
Strength of the sweating toiler,
Greatly in these we trust,
But back of them stands the Schemer,
The Thinker who drives things through
Back of the job—the Dreamer
Who's making the dream come true.

—BERTON BRAYLEY.

The greatest cry, at this time of many cries, is for men, more men, and still more men in the industrial fighting line, but it seems that a more appropriate demand would be for efficiency, more efficiency, and still more efficiency, because men may not be obtainable, whereas efficiency is. And to that end I should like to see the Taylor System of Shop Management generally adopted, because I believe its adoption would go a long way towards meeting the present situation.

It is not an industrial panacea, and would not immediately banish all our difficulties magically, but it would contribute materially towards the solution of the difficulties by greatly expediting the output of war materials, which at present is the requirement.

Quite apart from war and its requirements, even at normal times its general use would be desirable, because in the first place efficiency is preferable any day and anywhere to the chaotic condition and haphazard procedure of most shops. And, secondly, the Taylor System appears to be the *only* one that is fair to employers and employees alike.

It is in that respect, if in no other, better than any of the "speeding up" systems at present in use, such as piece-work, contract, and bonus systems, none of which are fair on the workman, and certainly not efficient. If they were worked scientifically and not abused, they might be fair and more efficient, but wholly efficient never. And as long as human nature is what it is, they will always be subject to abuse.

THE ABUSE OF PIECE-WORK.

"Piece-work," unless managed by a philanthropist, is not satisfactory, and may become a rank swindle. It is largely responsible for the bitterness of labour against capital—or perhaps it would be more correct to say, for such of the bitterness as is legitimate, for it must be admitted that *some* of the bitterness arises from the natural envy—shall we say?—of the poor against the rich. Wherever there is a grievance, piece-work and its concomitant evils constitute an important ingredient.

With piece-work must be included the "Contract System," which is much the same, the difference being that in the contract system, if a man gets behind, instead of having the deficiency deducted from his wages as in piece-work, he is put "in debt," and cannot get any "balance" until that "debt" is cleared off. Either system lends itself to being cruelly abused, and may be worked so that while a man can nominally make "time and a third" he cannot actually make much more than "time."

It is easily done by unscrupulous works managers on the following lines: While some jobs have fairly reasonable "prices," a certain number are deliberately cut down to preposterously low ones so that a man gets so badly behind with the bad ones that it takes all the "balance" he might otherwise get to make up the deficiency. So he spends his life struggling out of "debt" or making up the "deduct" made from his previous week's wages, and he never makes any headway—like Alice in Wonderland when she had to run as fast as she could in order to stop in one place.

The people who work this particular fraud are too astute to make all the prices uniformly bad. If they did a man would either "see the game" at once and would either quit or give up trying to make "balance," or he would get hopelessly discouraged and make no attempt to get and keep out of "debt."

The prices are fixed so that a man can sometimes make something with luck, just as a card-sharper lets his victim win occasionally to lead him on. The workman gets behind and perhaps attributes it to bad luck, and hopes the next one will be better and that he will be able to retrieve his position, so he is kept on the stretch. He struggles out of debt and begins to breathe more freely, hoping now that he has straightened things out he will be able to keep them straight and begin to earn some balance, when there comes a badly priced job and spoils it all, and he has to start all over again.

Even when prices are not deliberately under-rated, as long as they are fixed in the haphazard, guesswork way only too commonly in vogue, there will always be a per-

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centage that are under-rated unintentionally; and as long as they are fixed by foremen, or by rate-fixers who are under their control or in league with them, and the foremen are encouraged to keep down shop expenses (as, presumably, they always will be), so long will there be a tendency to fix low prices.

An incidental abuse of any haphazard "system" is when a leading hand, or a foreman, sees to it that his own pals have jobs with good prices, while those whom he has a spite against or who are temporarily in disfavour get bad prices. Have such things ever happened in Christian England?

Another abuse of either system, and one to which the bonus system is also subject, is cutting down the price when a man makes too much "balance" (or bonus). A foreman, or a rate-fixer, has so little knowledge how long a job should take, or makes such a bad guess, that he over-estimates the time required and "fixes" (note the "fixes") a price (which is not fixed but very much movable) accordingly.

A man gets to work on it and starts making more money than the said foreman, or rate-fixer, thinks (in his tender solicitude) is good for the man, and so he cuts down the (fixed) price. Then the workman expresses disapprobation, as unmistakable as it is unprintable, and next time he gets a job with a comfortable price he "nurses" it—which is all very sad and regrettable.

THE BONUS SYSTEM.

The "Bonus System" appears, at first sight, to be an improvement on the other two, and perhaps in some respects it is. But it is a most ingenious scheme for getting rid of conscientious, painstaking workmen while retaining the hardened sinners and "tough-uns."

In the bonus system each job is entirely separate, complete in itself, and if a man gets behind on one job he is not put in debt, nor is the deficiency carried on to the next one. He is forgiven the "debt" and nothing more is said about it (officially), and he starts the next job with a clean sheet. If he makes any balance on that one he is credited with the whole of it, irrespective of the deficiency on the previous job—a very benevolent and charitable arrangement.

But this is how it works. A conscientious, self-respecting man gets a job in a bonus system shop on a class of work that is unfamiliar, and gets behind with a job and is forgiven; then he gets behind with another job and is forgiven. He keeps on being forgiven "debts" and feels very uncomfortable about it—besides being open to possible gibes from the leading hand who, perhaps, has quarrelled with his wife—and got the worst of it—and wants to take it out of somebody.

The man feels that he is on sufferance, or that he is being pauperised and that he is not "earning his salt." Very foolish of him to feel that way? Perhaps so; but he does, and it gets on his nerves until at last he quits in despair—a good man lost who, with a little training, might have been one of the most useful workmen. A sensitive man really feels the position rather keenly and would, very likely, prefer to work on a contract system arrangement where if he got behind with one job he would have an opportunity to retrieve it on the next.

The "tough-un," on the other hand, says: "It is their own fault. If they put impossible prices on jobs they must bear the loss." So he goes serenely on, not caring if he does get behind. Thus price-cutting on bonus jobs defeats its own ends, because many men, when once they are behind, do not care whether they are an hour behind or three hours behind, and go on getting behind until they get what they would call "the sack"—and there are more men lost who, with proper handling, would have made good workmen. So the employers lose men both ways.

These are totally different types of men who, under haphazard management, are treated exactly alike. One

man will airily confess, "I've been in this shop nine months and I've never made any bonus yet, and don't intend to. At present I'm about two days behind." (This last with a most cheerful grin.) So he goes irresponsibly and merrily on, while another man is living in perpetual torment because he got half an hour behind on a job and is afraid he is going to get behind again. He is doubtless a better type of workman but needs a nerve tonic—the other has, perhaps, rather too much nerve, but it is no good denouncing him as a villain and despising the first as a duffer. These are admittedly extreme types. The majority are somewhere between the two extremes, but they all incline one way or the other.

MANAGERIAL INQUIRIES.

Sometimes managers, or managements, are misguided enough to send down inquiries to the shop as to why certain men got behind with their work. That might be well enough if they could rely upon the sense and tact of the foreman, but, unfortunately, they cannot.

He gets in a flurry and thinks he is going to get into trouble and goes off down the shop, more in grief than in anger, armed with a list of the delinquents, and then, either out of a perverse tactlessness or else by direct suggestion of the powers of evil, he selects the most timid man in the shop. This man, very likely, is just at the moment in a state of nerves, because he is afraid another job is going wrong and that he is not going to make his time. He thinks he is being blamed, and is reduced to a state of nervous collapse, and next time he gets behind he quits rather than face the music.

Is this an exaggeration? It may be a caricature, but a true caricature is an accentuation of characteristics, and this is an attempt to analyse and study the characteristics of situations that commonly arise in shops under the present ramshackle conditions.

Managements do often send inquiries why men have got behind, foremen do go to the men concerned about it, and it *does* often furnish the determining factor in making the man decide to quit. If managers really want to know why men get behind, asking the foreman will not elucidate the matter. At best, it will only produce that perfunctory banality—a "report." Asking the man himself directly *might* do, if it was done by the right man at the right time in the right way—with consummate tact. Studying the man and his conditions would be far better, because he himself may not really know, except that he got behind because he could not keep up.

A CASE IN POINT.

There is an aeroplane shop, a department of an old-established engineering firm with a reputation, where no proper instructions are given a man—in fact, none at all. The leading hand dumps down a job-card, saying: "Here, do this," and off he goes, leaving the man in bewilderment as to what he has got to do. The work is strange to most of the men, there is hardly a man in the shop who knows much about it—though they all talk like oracles. If a newcomer tries to get help from his fellow-workmen he is as likely to be put wrong as right.

Imagine the position of a man without any knowledge of aeroplane work. His previous engineering experience has been confined, say, to well-drilling. He comes into an aeroplane shop not knowing the difference between a fuselage and an aileron, never having heard of either.

He is dumped down to wrestle with an R.A.F. drawing without so much as an instruction-card to help him! And then someone innocently asks why he gets behind. Good instruction-cards might prove useful in aeroplane work where there are so many men to whom it is strange—if they are lucidly constructed and properly made out. But instruction-cards in general are often such weird contraptions that, to anyone who is not familiar with that particular brand, or not well up in instruction-cards, they are about as helpful as a cuneiform inscription.

(To be continued.)

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

DE MINIMIS!

Trifles, beyond question, do count in appearance. If Cleopatra's nose had been half an inch longer, they say—or her mouth as much wider—the history of the world might have been changed. Most forgetfully, you notice, they never mention Marc Antony in this connection, albeit he must have been a lad of great parts. However, the idea is sound. Some day I promise—if I can put any sort of comether on C. G. G.—to write quite a sensible chapter on the practical value of aesthetics in engineering—after all, nothing more than architecture or sculpture in steel—the recognition of which is no small part of the reason for Italian motor successes. To reduce the vague general conception of the matter to a concrete principle, briefly as may be, beauty necessarily infers symmetry, of which the immediate working result is balance, both for the weights of parts concerned and applied forces.

OLDER DEFECTIVE SYSTEMS.

So in the matter of the Beardmore-Porsche valve-gear, in which balance, and the manner of it, is the whole point. The root idea of the single rocker and tappet-rod is not new. But as it originated in Lancia's special racing F.I.A.T. model, eight or nine years ago, the heavy coil spring that seated on a forked lug from the cylinder casting, and bore upon the adjustable button on the rod, naturally held the latter—and its riser below—hard down on the double-ramped cam. And thus exerting a constant pressure of at least fifty pounds, it created a continuous negative force on the half-time gear; and hence a perpetual waste of power—beyond what was naturally

lost by the opposed curves of even the best involuted spur gearing—that might have been turned to useful-work account on the crankshaft. Bad as this result was, it was two-fold better than the conventional directly-operated, spring-for-each-valve method; so much better, indeed, as to combine all a "commercial" conventionality against its general adoption.

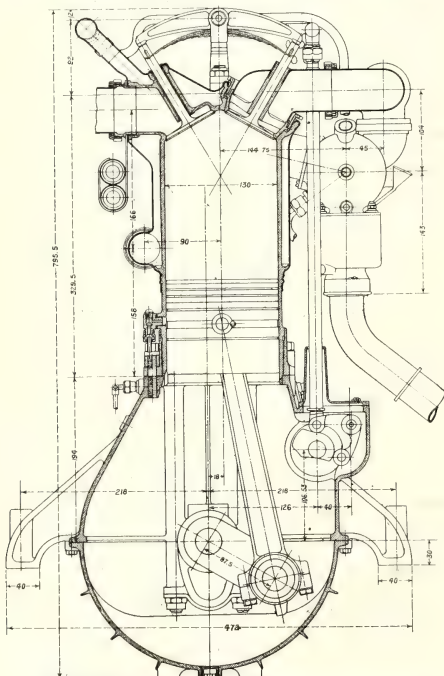
More or less—but mostly less—this defect was overcome in the Panhard, the Dansette, and other concentric-valved aeromotors; but never so thoroughly as in the Curtiss design—recently reviewed at some length—and in this case—or the beginnings thereof—Herr Porsche's original Semmering Hill-climb model. As we saw earlier, the Curtiss system serves to hold outer tube and inner rod risers in the lightest of contact-compression on their cams: so not a pound more power is lost in the valve-gear motion than is inevitable to depressing the valves from their seatings: and even that is lessened by the length of the duplicated rockers, and consequent extra leverage.

But light as all these parts are—thanks to the extraordinary quality of Monel metal and the way it is employed—one's catholic preference, all possibilities being equal—is for two parts instead of four, especially when combined with the laminated springing that, of all available kinds, is inherently the most remote from heat influence; and, in any case, has the largest radiating surface to disperse any heat it might absorb. Here, then, the Beardmore-Porsche design scores on both sides; all the more because there is nothing to hinder the tappet-rod being made tubular.

AND THE BEARDMORE WAY.

Beyond all, it is maintained in alternate and absolutely balanced compression and tension by the special operating mechanism. This, for each rod, rocker, and pair of valves, consists of a bell-crank, pivoted on a spindle in a recess of the crank-chamber, just outside the line of the cam-shaft. Each arm of the bell-crank—they are offset from each other—carries a roller in continuous contact with a cam. Now, the rod being jointed to the upper arm, and the cam-shaft running between both arms, it follows that the motion of the exhaust cam raises the upper arm, the rod therewith, and thus lifts the overhead rocker to depress the exhaust valve on the opposite side. The next moment, the inlet cam acts to depress both bell-crank arms, pull down the rod and rocker, and depress the inlet valve. There is, of course, no saving of actual power on the half-time gearing, as it obviously costs as much to press up the rod as to pull it down; and the sum of the two is, of course, the total expended. But the length of the rocker—which alternately becomes a lever of two orders—helps to lessen that loss: and so in a measure do the kind of spring used, and the fact that the moving parts are reduced to the least number possible.

The defect, however, of the design—which is remediable, being due to the angle of valve setting partly, also partly to the height of the rocker column being insufficient, and in any case is less in the later 120 h.p. than in the smaller model—is that the rocker motion is not quite radial to the valve-stem motion; that is to say, the plane of the latter is not truly tangential to the circular path of the rocker-ends. However, as this defect can only be overcome in the first place by a valve-setting at an exact 45-degree angle, neither more nor less—as in the original Pfänders-Bayard-Pipe modelling—and then only in combination with an overhead cam-shaft, unless, to avoid swinging out the tappet-rods unduly, one joints them to one side of the rocking levers, we may agree that the method in the present case is at least the neatest



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THE GEARING ARRANGEMENT.

Except that it is very well proportioned for its work, and to carry a journal bearing between each crank, there is nothing very special to notice about the crank-shaft. Nor is there anything remarkable beyond their lightness and strength, about the pressed steel pistons—which are rather short—and the connecting rods. The most interesting internal part, mechanically, is the gear work at the rear end of the crank-shaft, where, behind the half-time gear, a worm-gear wheel in the 50-h.p. model rotates a transverse worm-spindle, driving the rotary circulating pump on the left-hand end and the magneto on the right.

THE LUBRICATION SYSTEM.

In the 120-h.p. model, however, a kind of double mitre-gearing—much resembling one type of motor-car differential—is mounted on the tail of the crankshaft, so that while two of the verticals rotate the magneto spindles, the transverse one rotates the lower horizontal gear to drive the water-pump directly beneath and outside the casing, and the upper horizontal to rotate the driving spindle of the Beardmore-Friedman-Bosch mechanical lubricator; this spindle being also extended upwardly to actuate a revolution counter. The mechanism of this lubricating device is interesting, too, for being so uncommonly simple and effective, so certain in its action and, withal, so capable of being readily adjusted. For the body of it consists merely of a short vertical shaft—driven through a large worm-wheel and a small worm-gear from the aforesaid spindle—that carries a horizontal scroll cam. The other working parts are a set of G-shaped adjustable valveless plungers—very much resembling precision gauges—the G-parts of which embrace the scroll of the cam, and are consequently moved up and down as the cam rotates: the up-stroke of one plunger feeding the barrel of the next one to it—through ports, valvelessly. Now, the metal box encasing all this mechanism being full of oil—the quantity contained at any moment being constantly visible from a gauge-glass at the back—the device is obviously self-lubricating, and the plungers are under constant mutual supply-feed. Consequently, each one is enabled to drive the oil positively to the parts it is designed to lubricate, one sending it through a bandeau of small copper tubes inserted into the lower cylinder walls; another—through branched leads in this case—to the crankshaft bearings, main and intermediate; a third, direct to the front shaft-extension and the double thrust ball-races that carry it, encased, to take the propeller drive; a fourth, in the same way, serving the cam-shaft and all parts of its incumbent valve-gear; and so on, to the extent of some half-dozen.

*(To be continued.)***A CORRECTION.**

The following letter has been received:—

Sir,—May I draw your attention to a misprint in my letter published in *THE AEROPLANE* of August 18th last?

In the right-hand column, line 4 from top of page 208, the words "per cent." occurring twice should read "degrees" in each case.—(Signed) A. H. BURNARD.

A MODEL FACTORY.

The journeyings of pioneers ever follow the strait path up the steep and stony side of the mountain of endeavour, but the summit of the peak must be surmounted before the traveller can declutch and coast down the gentle slopes of success into the valley of prosperity. There is but little doubt that the forerunners of the voyagers in the "third element" have carried more than the common load up the narrow track.

One of the first firms to dedicate its energies to a really serious attempt to make aviation a profitable business was founded by Mrs. Maurice Hewlett and M. Gustave Blondeau. In 1911 a flying school was opened at Brooklands, where a great deal of very sound flying was taught. Mrs. Hewlett was taught to fly by M. Blondeau, and as soon as she had acquired proficiency she imparted the art to her son, now Squadron Commander, R.N.A.S.

In those early days the organisation of a flying school had to be a labour of devotion. The question of immediate profit-making did not dominate. Faith in the future was practically the only encouragement, and the principal aims of those who initiated the early aviators was to keep faith with their patrons with the minimum of loss.

Ultimately, however, the construction of aeroplanes and aeroplane parts gradually absorbed the attention of the firm, and a factory was established at Clapham which speedily acquired a reputation for workmanship of the highest quality. A speciality was made of acetylene welding work, which must be done well and conscientiously, or not done at all. The Clapham works turned out but one grade—the best. Numerous machines were built to both Government and private requirements, and spares and parts, such as sockets, strainers, clips, engine-plates, and struts, spars, ribs, wings, and control members, were made for most machines then existing.

Among other machines, a number of B.E.s, Caudrons, and Hanriots were built, and later the little 50-h.p. monoplane designed by Mr. G. M. Dyott, now Flight Commander, R.N.A.S. The Hanriots were particularly beautiful specimens of workmanship, and their steel construction gave the firm full scope to display their craftsmanship as metalworkers.

In 1914, Hewlett and Blondeau, Ltd., realising that they must be prepared to expand their works to keep up with the demands imposed upon them, moved to Lea-grave, in Bedfordshire, and, selecting a site where extensions might be made at any time untrammelled by ad-

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adjacent buildings, set up a model plant which many establishments in Hampshire and elsewhere might do well to take a lesson from. The completion of Omnia Works and the organisation thereof involved time and the outlay of much money, but everything was in full swing when war called forth their energies.

The organisation of the works has been based on a principle of independence, and no reliance is placed upon the performances of other firms and sub-contractors. Nothing enters the works but raw material, engines, and certain instruments which have to be fitted. All bolts, nuts, sockets, clips, struts, plates, stampings and forgings are done on the premises, and some truly astonishing acetylene welding and tube-bending performances are done, all with that coolness and deliberation which inspires confidence.

It is, of course, impossible even to hint at the nature of the work in progress at the present time, and inquisitive souls are warned not to attempt to beard the sentries who guard the forbidden portals from the wiles of intruders. Suffice it to say that it is all being carried out with the workmanship and accuracy which is synonymous with the names of Hewlett and Blondeau.—W. L. W.

A NEW-COMER AT HENDON.

Mr. Frederick H. Payne has been elected a director of the Grahame-White Aviation Company, Ltd. His name is well-known to the public in connection with various entertainment schemes, especially Olympia, Earl's Court, and the Holland Park Skating Rink, and, doubtless, when Hendon resumes its place as one of London's outdoor pleasure resorts Mr. Payne's experience in these directions, together with his personal popularity, will be a considerable asset to the company. Meanwhile, the present duty of the London Aerodrome being to build machines and train pilots for active service, he will have plenty of scope for his energies in helping to increase the efficiency of the organisation at Hendon.—D. W. T.

THE WEEK AT HENDON.

The weather lately has been more favourable, and school-work and hay-making are in full swing at Hendon. On Thursday there was an unusually large attendance of the public—probably the best crowd on a Thursday for twelve months—and many good flights were made. The popularity of the Aerodrome as a resort for convalescent soldiers appears to increase steadily.

The air was excellent for flying on Saturday when Mr. Birkenough tested one or two machines for the Aircraft Company. The Beatty School was represented by Messrs. Roche-Kelly and Prodger, both giving some very entertaining displays. Mr. Grahame-White took several parties of friends up in the five-seater, which climbed rather better than usual with four on board. The air was steady, and he flew for some time with hands off, the machine going quite comfortably. Mr. Osipenko also carried many passengers in the same machine.

A new Grahame-White school machine, with a 60-h.p. Le Rhone engine, made its first appearance with Mr. Manton, a passenger, and a good supply of petrol; it climbed 1,000 ft. and glided down again in 4 mins. 5 secs., which shows the box-kite is a useful article with a good engine. Another component of the school had been fitted with new stays during the week, and was looking very well.

Mr. Baumann flew, with and without passengers, on a 60-h.p. Ruffy-Baumann biplane, and Mr. Winter took passengers round. Mr. Sydney Pickles brought out the Mann biplane, which has had many alterations effected, and now appears to fly very well. I understand it recently accomplished a very creditable hour's test, reaching a height of nearly 5,000 ft. with a passenger. Its speed, with "two up," is about 75 m.p.h. On Saturday it certainly went quite respectably.

On Sunday there were almost a record number of

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flights made for 1915. From half-past two until night-fall there were usually two or three machines in the air at once, and frequently five or six, and visitors had no reason to complain of boredom. The Grahame-White pilots were all busily engaged, the five-seater being particularly hard at work. Just before it was put back into its shed for the night, Mr. Osipenko took up, among other passengers, a sergeant-major of Marines, who has been inhaling the Hendon air for twelve months, and now weighs twenty-one stone. The unkind suggestion was made that he might be used for sinking battle ships.

One of the best flights of the day was made by Mr. J. L. Hall, who dived and banked at astonishing angles, and, in fact, did everything but "loop the loop." As an exhibition of fancy flying one has seldom seen anything better at Hendon.

Mr. G. W. Beatty was seen on a Caudron, doing very well in spite of a mishap on a similar machine during the morning. Mr. Kenworthy was also flying a Beatty-Caudron, while Messrs. Prodder and Roche-Kelly flew Beatty-Wrights. Mr. Irwin, who is new to the public, at any rate, gave exhibitions on an L. and P. machine, and did excellent work. Messrs. Baumann and Virgilio were, also out. Mr. Pickles made two attempts with the Mann biplane, but some trifling engine trouble prevented the tests he had intended to carry out.

School-work on a wholesale scale in the evening provided many exciting episodes, the most alarming being the mishap which befell a pupil who was doing his brevet tests on an L. and P. machine. Having successfully completed his figures of eight he was starting for his third flight, when he side-slipped heavily from a height of 30 or 40 ft., and the machine was seen to crumple up in a most unpleasant fashion. It had been noticed that the engine was not running properly.

Many motor-cycle and pedestrian excursions started from various parts of the ground for the distant spot where the accident occurred, but although the machine was a complete wreck the pilot was not hurt. The moral seems to be that the Caudron type of machine is a very safe one in which to be smashed.

During the week Mr. Manton has been testing a new Morane.—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon	Fine	Fine	Fine	Fine	Fine	Fine	Fine
East Coast	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Lake District	Wind	Rain	Wind	Fine	Fine	Wind	Wind

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, R. Kenworthy, A. E. Mitchell.

Pupils with instructors on Beatty-Wright machines: Messrs. Arbon (25 min.), Bond (55), Boyle (8), Davison (10), Delves (27), Dickson (85), FitzHerbert (50), T. Jones (27), King (42), Morgan (40), Ross (37), Samson (35), Theo (35), Vickers (15), Hoskier (10).

On Caudron machines: Messrs. Arter (10), Boysen (30), Broadbent (10), Cadogan (30), Coates (10), Collett (5), Cox (30), Davison (10), Fawcett (35), Goodfellow (95), Hoskins (6), L. F. Jones (20), Kirkwood (10), Middleton (10), Moxon (15), Nicholson (20), Overton (10), Tremlett (10), Whincup (30), Wiles (20), Campbell (50), Thomas (75), Summers (40), Mellings (20), Bowick (10), Begg (20), Grant-Suttie (40), Richard (30), Byrne (30), Cumming (10).

Certificates were taken during the week by Lieut. T. M. Dickson and Mr. Alan Goodfellow, each of whom made excellent flights and completed the tests in 30 mins. Mr. Goodfellow playing in splendid style from 1,700 ft.

Machines in use: Beatty-Wright dual control and single-seater propeller biplanes and Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday and Sunday and seven passenger flights were taken.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio, Clarence Winchester.



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Pupils with instructor: Messrs. Ovens (26 min.), Bailey (32), Ball (20), Brand (12), Hughes (48), Prothero (24), Stewart (72), Muspratt (56), Hodgson (6), Rees (48), Phillips (48), Sherwood (38).
Doing straights or rolling alone: Messrs. Phillips (50), Liddell (10), Rees (16), May (4), Belton (10), Young (28), Prothero (24), Rees (24).

Figures of eight and circuits: Mr. Gardner (25).
Mr. Gardner accomplished his two sets of "eights" and has now to complete his vol-plane.

Machines in use: R.-B. tractor (60 h.p.), R.-B. tractor (50 h.p.), Caudron type (50 h.p.) biplanes.

Second Lieut. M. G. Phillips, who joined the school last week, is making very quick progress and should take his ticket within the next day or two.

AT THE HALL FLYING SCHOOL.

The following pupils took excellent certificates: Messrs. Lieut. Jowett, Mr. Charles Bell and F. E. Goodrich.

Pupils with Instructor H. F. Stevens: Messrs. Charles Bell 14 circuits and 2 figures of eight, Lieut. Howett 14 circuits and 2 figures of eight, F. E. Goodrich 10 circuits and 4 figures of eight.

With Instructor Cecil M. Hill: Messrs. Goodrich (8), Littlewood (30), Wenner (40), Yonge (36), Russell (40), Hatchman (36), Huggan (49), Watson (34), Drew (26), Scott (20), F. Hall (11), Ackroyd (18), Butterworth (20), Brandon (33), Sepulchre (13), Hooker (11), Punnett (11), Wilkins (12), Bond (6), Cook (22), Arnsby (19), Mason (6), Cownie (11), Bayley (20), Hamer (14), Stirling (6) and Broad (19).

Exhibition flights were made during week-end by Mr. J. L. Hall, who gave an exhibition of looping, by Mr. C. M. Hill, who made a good flight with a multiple spiral glide, by Mr. J. Stevens, who made right and left highly banked cork-screws, and by Mr. Chas. Bell.

AT THE LONDON AND PROVINCIAL SCHOOL OF FLYING.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, J. H. James, G. Irving and C. Jacques.

Pupils doing rolling: Messrs. Rerton, Grinwade, Woolley, Jamieson, Franklin and Rochford.

Pupils doing straights: Messrs. Blackburne-Maze, Frost, May, Ross, Sargood and Willox.

Pupils doing circuits, half-circuits and eights: Messrs. Woodley, Moynihan and Roe.

Two good certificates were taken this week by Mr. H. Conner and Mr. T. Maxwell Scott.

Owing to an error, Captain J. Everidge, of the Surrey Yeomanry, whose photograph appeared in *THE AEROPLANE* last week, was said to have taken his certificate at the Ruffy-Baumann School. As a matter of fact Captain Everidge took his certificate at the London and Provincial Aviation Company's School at Hendon.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Beare, Biscoe, Cross, Davies, Curry, Ford, Gammon, Gasson, Hadow, Man, Sadler, Smethurst and Till.

Circuits with instructor: Prob. Flt. Sub-Lieuts. Beare, Ford, Smethurst and Roach-Pierson.

Eights alone: Prob. Flt. Sub-Lieut. Gasson.

Machines in use: Grahame-White biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: W. Rowland Ding and J. Lankester Parker.

Pupils with instructor: Messrs. Amble (14 mins.), Benson (25), Igham (44), Inglis (51), Lawton (20), Latch (15), Part (53), Ridgway (29), Robertson (43), Robinson (25), Shaw (41), Yates (13), Macintyre (13) and Capt. Everidge (16).

With instructor as passenger: Messrs. Laidler (37), Macaskie (50), Reid (42), Ridgway (9) and Slingsby (31).

Straights alone: Messrs. Laidler (29) and Macaskie (10).

Machines in use: N.A.C. 50 Gnome pusher biplane and N.A.C. 81 Gnome monoplane.

Messrs. Rowland Ding and Lankester Parker out testing and carrying a number of passengers. Considering that the weather has been far from good, our ten hours' flying tuition is a very fair week's work.

Owing to some curious error it was stated last week that Mr. S. J. Sibley is under age for his certificate. Mr. Sibley is, in fact, just over 19, and his certificate has therefore been granted.



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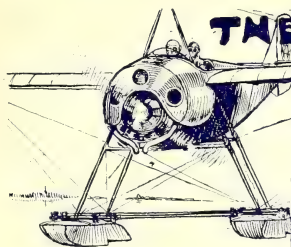
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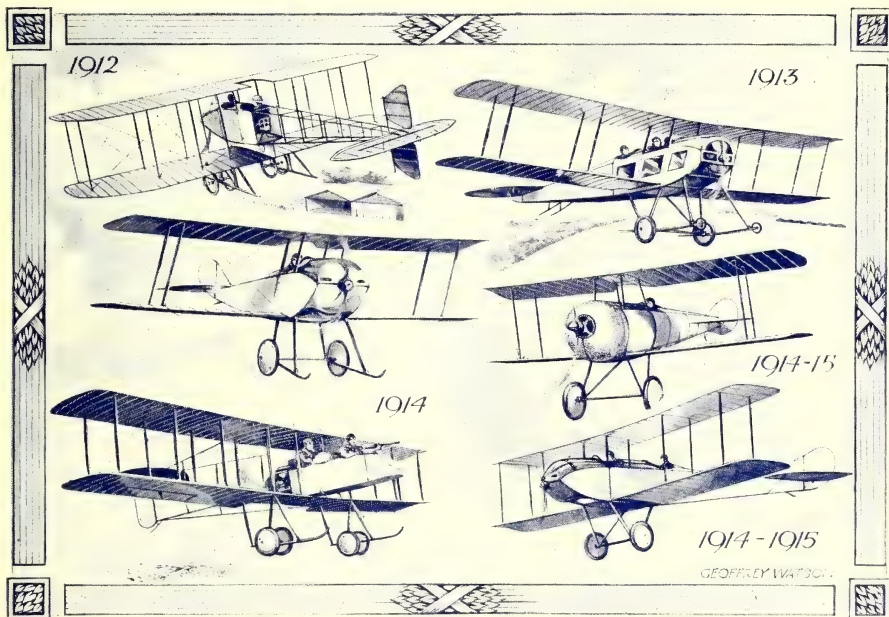
Edited by
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Vol. IX. No. 9

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ON DEPARTMENTAL HABITS.

Many months ago a young friend of mine, bursting with enthusiasm and patriotism, and burning with a desire to go Hun-slaying in defence of his country, enlisted in one of His Majesty's armed forces.

Unhappily for him he was found to possess certain ability of a clerkly nature which fitted him, while retaining his humble rank, to do work of a kind for which civilians draw large salaries, and in consequence he has been kept furiously fighting the Germans with ink so that incompetent superior officers may profit by his ability and be saved from the consequences of their many mistakes.

Writing to me some time ago he remarked: "I have personally always taken the view that life was much too serious for one to do anything but laugh at it, but that is evidently a doctrine only suitable for the elect, for since the war it would appear that many of the Gentiles have adopted the faith—and they have turned life into such a farce that one can only weep at it."

On the whole I think he is wrong. The farce is not the result of anyone laughing at anything, it is merely an honest attempt at serious drama on the part of incompetent actors.

Probably most people have at some time or other seen heavy dramas played by fifth-rate touring companies in "fit-up" theatres in small provincial towns, and have been reduced to a state of helplessness by laughter at their efforts. Still, those poor buskers are honest and serious in their work. They do not play with their tongues in their cheeks as do many highly successful "artists" on the London stage, who achieve their eminence by mere cleverness and self-advertisement. Yet the honest bunglers cause the more merriment—except to those whom my young friend calls the "elect," and to them it is the pathos of misguided effort which causes weeping.

It is well to remember, then, that nearly all our Army and a goodly portion of our Navy is a "fit-up," therefore it becomes us ill to laugh at the well-meant efforts of either. The Grand Fleet is, of course, the finest thing of its kind the world has ever seen and the late lamented expeditionary Force was a marvel of organisation and efficiency, but the rest is pure "fit-up." Hence such things as a patrol ship with seven so-called engineer officers (R.N.V.R.) on board, which has to requisition the local plumber at a port of call to mend some leaking pipes—which thing is a fact.

One reason for the curious things that are done on both sides of Whitehall seems to be that when the growth of Navy and Army made it necessary to expand the administrative staffs of all departments the High Authorities roped in all kinds of queer people from civilian life and put them in uniform to do the routine work, and placed over them equally queer "dug-out" officers of a past generation with ideas and methods to match. The younger and more energetic Service men who were in these departments when war broke out were naturally anxious to get off on active service and distinguish themselves, and their places had to be filled

by people who did not know the work. Those of the experienced staff who remained were so overweighted by the increased work of their own departments, by trying to teach newcomers their jobs, and by wrestling with the mistakes of other departments that the only possible result was muddle and confusion. Unfortunately there is little opportunity or prospect of improving matters, for the newcomers are by now so firmly tangled in red tape that they cannot find their way out.

LIGHT DUTIES AT HOME.

It has been suggested that wounded, invalided, or war-worn officers might be put on to jobs in Whitehall as "light duty," but, as a matter of fact, one needs a stronger constitution to stand the hours at the Admiralty and War Office than to do work in the field. The truth is that officers detailed for light duty at home frequently beg to be allowed to go on active service as a rest cure. The R.F.C. officer who defined the work of an aviator as consisting of "hours of idleness punctuated by moments of intense fear" spoke several truths, for the moments during which a flying officer is the sole object of Archie's attentions do not annul the health-giving effect of the fine fresh air aloft and the comparatively care-free life on the ground between reconnaissances.

Nevertheless, a good deal more use might be made of officers home from the front. Naturally they report at Whitehall and relate their experiences, but so far I cannot recall an instance of any officer who has done much active service being put on to regular inside administrative work either in the Air Department at the Admiralty, or in the Department of Military Aeronautics, and I take it that other departments are much the same in their methods.

THE MAN WHO KNOWS.

It seems possible that the experienced actors who have been in front of the German limelight might improve the work of the people in the "fit-up" theatres at home, who seem possessed by that insularity and "provincialism" peculiar to the Londoner. A little more of the point of view of the man who has been abroad might broaden their horizon considerably, with the effect of increasing efficiency all round, and removing numerous inconsistencies.

It seems therefore that it might be good policy to bring back a few of the officers who have done well on active service and have also shown that they can use their brains, and set them to work on either side of Whitehall. The loss of one good pilot or observer from the front would be more than made up by the improvement he could effect in things at home.

I do not mean that any change is needed in heads of departments, for both Flying Services are singularly fortunate in that respect, but no departmental head can do his own work and look into the details of his subordinates' work as well, and it is just in this that the mistakes occur.

THE SUB-DEPARTMENTS' WAYS.

For instance, a certain make of air-speed indicator, or petrol gauge, or compass, or revolution indicator may be the standard fitting for a certain type of aeroplane, and there may be a shortage of that particular fitting for a week or two which delays the delivery of certain machines which are badly wanted. Now the obvious thing a man on active service would do is go without that fitting, or fit something else that does just as well—for in none of these things is there any absolute pre-eminence. And if he were on Headquarters' work at home he would notify other departments concerned accordingly.

But the sort of thing that happens at present is this: First the constructor writes to a certain department to say that the machines on order are finished and ready for delivery but one or other of the standard fittings cannot be got for a month. That department writes that the machines must wait for the fitting.

A few days later another department writes to know why the blank the machines have not been delivered up to time?

Then another department writes that the machines must be delivered without that fitting, which will be fitted by the air mechanics from machines which are under repair or smashed.

Then some sub-department writes that the fittings of damaged machines will be sent by the Government to be fitted by the makers.

Then another departmental genius writes that the machines must be sent at once to a certain place without waiting for the fittings.

Probably at this point the maker in desperation sends the machines off, and they are duly put through their flying tests and accepted and signed for.

After which comes a furious letter from yet another sub-department inquiring sarcastically what the maker means by delivering aeroplanes minus the standard fittings, and whether he thinks the pilot is going to time the revolutions with an oil-can, or steer by a sixpenny pocket compass, or gauge his petrol supply with a stick.

Then, after a decent interval, another sub-department altogether writes saying that on certain machines (order

numbers specified) the makers may substitute fittings of such and such's make instead of so-and-so's (the sealed pattern) owing to shortage of supplies of so-and-so's. In the meantime the machines have probably gone on active service and have been smashed, and have been sent home and rebuilt and sent out again.

I think that perhaps the real outside limit was reached in one instance, when, after a process very like that detailed above, yet still another sub-department wrote to say that as it was found that there was a slight defect in so-and-so's fitting (series number of the particular fitting given) supplied for machine number so-much, this fitting was not to be used, and that the machine was to await a replacement, but that the others of the batch were to be delivered at once with the fittings already supplied by that sub-department. Which instruction was received some time after the whole batch had been delivered without that particular fitting under instructions from quite a different department, and had been flown regularly in the meantime by Service pilots.

DO NOT SHOOT THE PIANIST.

Trifling inconsistencies of this kind, caused chiefly by lack of co-ordination of departmental work, may delay deliveries a good deal. They certainly make for friction between the constructors and the Services, and between one department and another. Even if all this is smoothed over they show terrible waste of time and energy, and indicate a low efficiency which would not be tolerated in any inanimate mechanism used by the Services.

A few men fresh and hearty from active service, with the remembrance in their minds of the effect of futile delays, would soon stir things up, and would remove such inconsistencies before they had time to do harm.

Meanwhile, you are requested not to laugh at the operations of the various departments. You may, perhaps, weep quietly over them, especially if anyone you love depends on the supply and equipment of aeroplanes for his safety on active service. There is a legend of a Western American dancing saloon which displayed a notice saying: "Visitors are requested not to shoot at the pianist. He is doing his damndest." At the same time, those who pay the piper must call the tune, and they may be forgiven for shooting him on occasions.

ON THE OFFICIAL MIND.

The official mind is a curious thing. There are times when one has a horrid suspicion that it possesses a grim humour of its own. At others it appears to be mildly chaotic, or simply imbecile.

Last week it was announced that a special badge had been sanctioned to be worn by R.F.C. observers. I have now seen the badge, and I would dearly love to meet the designer thereof. Figure to yourself, if you please, a large O worn on the left breast above any medal ribbons the owner may boast, and protruding from it in the direction of the left shoulder the outstretched liver wing of a diminutive chicken—the whole being carried out in the pale fawn silk stuff of the R.F.C. badge—and you have a fair idea of what it looks like.

Presumably the purveyor of brain-waves who produced it intended that the O should stand for Observer, and that the wing should indicate some connection with the Flying Corps. Unfortunately, the O looks equally like the numeral nought, familiarly known as a duck's egg, the wing somehow suggests half an R.F.C. badge, and the whole—on the lines of a conundrum—seems to convey the idea that the wearer is not half a flier. A distinctly unfair reflection on those who are perhaps the most heroic persons in an unusually brave army.

Of course if one chooses to interpret the phrase "not

half" in its slang sense the badge may suggest a subtle compliment, but that seems just a trifle too subtle for official humour, and one is forced back on the idea that someone who had been badgered to sanction the badge selected this design from among others with malice aforethought. Of course he did not, but that is what seems to have struck some people with acute if misguided minds.

As a matter of fact the wing is not really one of the regulation R.F.C. pair at all, but quite a different shape and, as I have said, like that of a chicken, which conveys the suggestion that the O-ner not only cannot fly but is never likely to fly. Which again is unfair to the observers, several of whom have turned out to be very fine pilots. And, considering how jolly brave they have to be to trust themselves absolutely to the problematic skill of a young gentleman (temporary or otherwise) to whom they have barely been introduced, the association with a *liver* wing is positively indecent.

SOME MIGHT-BE'S.

Surely it should have been possible to have evolved something worthy of the men and the occasion. Even the ordinary R.F.C. wings with an "O" in the middle, instead of the letters R.F.C. and the crown, would have been an improvement. Someone has suggested

an embroidered eye with small wings above or below, but I submit that it is too suggestive of the famous Mormon symbol to meet with general approval, though only for the claim to prior user which might be set up by the heirs and assigns of the late Brigham Young the suggestion might be worth working out.

A pair of winged binoculars might also be a useful design, and would, at any rate, be as indicative of its purpose as is the curious little badge worn by the Armoured Car Support—or should I say “the late”?—a badge which always somehow reminds me of those comic shaped biscuit things that one finds in soup.

Can any artistically minded reader make a really good suggestion for an observer's badge? They deserve something really good, and it may console them to see what might have been, even if they can never have it.

VAGARIOUS AWARDS.

Another phase of the official mind is also worth investigating—to wit, that concerned with the allotting of rewards for conspicuous bravery, devotion to duty, and all that sort of thing—including devotion to one's O.C. when he gets himself into a tight place and needs the help of a bright young brain to get him out.

The R.F.C. has done pretty well in the matter of honours and distinctions, though by no means unduly so, considering only the value of the work they have done for the Army, and leaving out entirely the special risks the pilots and observers run. In fact, compared with the work the Staff has done—and has left undone—and the number of assorted D.S.O.'s and so forth the Staff has had, the R.F.C. has been rather underdone. However, assuming without admitting that the actual number of awards has been adequate, one is moved to reflect upon the working of the official mind in allotting those awards.

The short official notes which on occasion accompany the public announcement of these distinctions either say too much or too little. For instance, some months ago an R.F.C. officer attacked eleven German machines in succession as they were making a raid on a French town, and finally singled one out and chased it to earth. Two other officers following him took on the remaining ten and drove them off, with five-to-one odds against them. So much the official “Eyewitness” told us at the time. The first officer mentioned got a D.S.O., and the others got nothing.

Now a few days ago another officer got the V.C. for attacking three German machines and bringing one down. The same officer had previously got the D.S.O. for destroying a German airship shed, despite the efforts of the crew of a kite-balloon anchored over it—which balloon he used as a shield against fire from the ground. The earlier feat showed him to be at once brave and resourceful, a combination which should take him far towards professional success. Still, nothing of this is shown in the official note, which, taken in conjunction with the earlier awards, merely shows that if a pilot attacks with 3 to 1 odds against him he gets a V.C., if he tackles 5 to 1 he gets nothing, and if he tackles 11 to 1 he gets a D.S.O. On the face of it there seems to be something wrong with the tariff.

Possibly special promotion may be reckoned as part of an award. For instance, one V.C. may perhaps be reckoned as equal to a D.S.O. plus promotion to Squadron Commander, or something of that sort; or if an officer has already got one D.S.O. and has won another and is too young to be a Squadron Commander, he may possibly be given a V.C. by way of a cumulative reward. But it would simplify matters if some indication were given of the relative values of the different awards, or whether some specific difference between two apparently similar acts makes one worthy of a D.S.O. and another of a V.C. Also, it would be

interesting to know whereabouts in the hierarchy of bravery the wearer of a Military Cross comes in.

NAVAL ESTIMATES.

The same confusion seems to exist in the official Naval mind. An officer destroyed an airship shed with a Zeppelin inside and got a D.S.O., incurring immense personal risk in doing so. At a later date another officer attacked a Zeppelin in the air and failed to destroy it owing to some peculiarity about the kind of bomb supplied. Nevertheless, he took an unknown risk—which is worse than a known risk—but no reward was forthcoming. Soon afterwards another officer, taking the risk discovered by the last-mentioned officer, destroyed a Zeppelin in the air—and, incidentally, certain friendly property—and was given a V.C. On the same day two other officers, taking the known and very much greater risk of attacking an airship shed with carefully prepared defences of anti-aircraft guns, destroyed the shed and a Zeppelin inside, which did greater service to the country, involved greater danger to them, and inflicted heavier loss on the enemy, and were given Distinguished Service Crosses.

It seems that the D.S.C. is generally esteemed as being below the D.S.O. in merit, and that the D.S.O. is below the V.C.; so if one considers the merits of the acts mentioned above the awards must be all wrong. Perhaps the bravest of the lot was that of the officer who first came down low in the face of an unknown number of machine-guns and anti-aircraft guns and destroyed a shed and its airship. It always seemed to me a V.C. job on account of the bravery the pilot showed in the face of unknown danger, though the result achieved certainly constituted distinguished service. The second bravest seems to have been that of the pilots who attacked a shed known to be stiff with offensive armament, arranged by the enemy as the consequence of lessons learned from the attacks on other sheds. The result obtained in this attack also constituted distinguished service of a high order.

The third action in point of bravery—or even bracketed second—seems to have been that of the officer who first took the unknown risk of attacking a Zeppelin from above. The Germans had always made a boast of the bristling machine-guns carried on the top of Zeppelins, and it was not till he had taken the risk of being shot by such guns that the pilot in question found they were not there.

His discovery that the back of a Zeppelin is as bald as an egg proved beyond dispute that the safest thing to attack, in the way of aircraft, is a Zeppelin, when once the aeroplane is above it, for the crew cannot fire upwards from the cars below and it is not protected, as a shed is, by anti-aircraft guns on the ground. Consequently, unless an aviator attacks a Zeppelin from below, or on its own level—as one officer did in despair because his aeroplane would not climb fast enough—practically no risk is involved. The attacking aeroplane may be turned over by the air-wave of the exploding airship, but that is of no consequence to a capable pilot on a decent aeroplane.

Thus, one sees that less mere bravery is required to destroy an airship when in the air than to attack a shed. Further, less distinguished service is done when it is destroyed, because the vacant shed and all its stores are left ready for the next ship, and the destroyed ship may do much damage by falling on friendly property. Also, it takes less skill to bring it down, because as it is moving the aeroplane can be slowed down to about the same speed. Therefore, on all counts, the “flying shot” is the easiest.

All of which merely shows the curiously confused state of the official mind when it tries to deal out awards.

CRIMINAL NEGLIGENCE.

There is no room this week to deal with the attitude of the official mind towards the supply of aeroplanes. The subject deserves an article all to itself. One must, however, draw attention to the fact that last week the R.F.C. lost one of its best, most experienced, and most distinguished pilots in an accident to a French machine, which has already killed several of the best French and Belgian pilots, and is known to be one of the most dangerous ever designed. Its one virtue is that it climbs fast, and for that reason it is preferred by some pilots to the R.A.F.'s machines, which generally refuse to take a pilot out of range of rifle fire.

Except for the intense density of the official mind, there is no reason why any pilots should be forced to choose between being shot because their machines will not climb, and being killed because their machines are uncontrollable in the air.

There are plenty of British machines which climb well and are controllable, but they are not being produced in quantities as they should be, and the R.F.C. authorities consequently buy French machines to fill up the deficiency in numbers. Unfortunately, almost the only French machines obtainable are those condemned by the French Government as dangerous, or refused by the French pilots as impossible to fly. Moreover, hardly any, if any at all, of these French machines would pass any of the tests for strength of design or quality of material which are very rightly exacted by the Aeronautical Inspection Department from all British machines.

We have already had many pilots killed in foolish accidents on these French cast-offs, and on French machines which I have stated in this paper to be dangerous, and yet the authorities go on buying them and go on killing pilots. How long is this to continue? I propose to deal with this subject at a later date.

THE DEAD WITHOUT HONOUR.

One most glaring inconsistency of the official mind of the War Office is found in connection with these fatal accidents. The Official Casualty Lists are generally regarded as the Roll of Honour. All those who die in the defence of their country should be included therein. But, owing to the peculiar working of the official mind, the Casualty Lists only contain the names of those dead and wounded abroad.

A man may die in hospital in Paris or Malta or Port

Said of some disgusting disease brought on by his own vices and his name goes down to posterity as one of Britain's heroes. But if a man (generically, and including officers) is killed by a gun explosion, or in testing a new and dangerous form of bomb (as in the case of one of the most highly esteemed R.F.C. officers, at Netheravon), or when flying on service at home, as so very many have been, his name sinks into oblivion, and his death may pass unnoticed by his dearest friends, unless some bereaved relative is sufficiently composed to advertise his fate in those so-called "Rolls of Honour," out of which the daily papers must be making quite a handsome profit at present.

It seems peculiarly indecent that a widowed mother, whose only son has been killed in the service of his country at home, should be compelled in the midst of her grief to count out so many words to the line and so many shillings for the advertisement to prevent his name from being forgotten, and incidentally to prevent cheerful friends, who would otherwise remain ignorant of the boy's death, from rushing at her when they meet, perhaps months after he has been buried, and asking what is the latest news of the dear lad.

It seems also that wounded officers and men who die of their wounds do not appear in the Casualty List unless they have the good taste to die abroad. I suggest, therefore, that one thing to be done when Parliament again meets is for some M.P. possessed of human sympathy—if such an one exist—to demand that the War Office shall publish a list of officers and men who have been killed or have died of wounds at home. The R.F.C. would, I fear, furnish a disproportionately large section of that list.

One would like to see the Department of Military Aeronautics publish such a home casualty list of its own in the near future, so saving the intervening time before such a demand is made and acquiring a reputation for considering the feelings of the relatives of R.F.C. officers. The D.M.A. has a precedent in the Air Department which makes no attempt to hide the R.N.A.S. casualties which are due to accidents, but publishes them as part of the regular Naval lists.

The official military mind is frequently foolish, but it generally means well. Probably it will agree with me on all these points now they have been pointed out to it. The pity is that among its many attributes of high excellence the official mind has so little room for common sense.—C. G. G.

THE BRITISH HEIGHT RECORD.

The Royal Aero Club has now recognised the claim of Mr. G. H. Hawker to the British Height Record. It will be remembered that on June 6th Mr. Hawker, flying a new type Sopwith land tractor at Hendon, reached an altitude of about 18,000 feet. This has now been passed officially as 18,393 feet, so that it exceeds the record of Squadron Commander E. F. Briggs, D.S.O., R.N., achieved on March 11th, 1915, by about 3,400 feet. Of course, Commander Briggs' record was exceeded on several occasions, notably by Mr. (now Captain) Norman Spratt and by Captain (now Major) Becke, R.F.C., on an R.E. biplane, and by Mr. F. P. Raynham on an 80-h.p. Avro biplane, but for one reason or another the records never received official recognition.

ANOTHER PROPHET.

A paragraph from the "Observer" is not without interest. "Observer" says:—

"Most of us (though we never read it) know that "Russelas" anticipated the art of aviation, but not many of us know the peculiar appetiteness of the reference. The

passage is recalled by a correspondent of the "Pall Mall Gazette." The Prince had solicited the aid of an engineer, who, however, stipulated for absolute secrecy as to his invention:—

"Why," said Russelas, "should you envy others so great an advantage? All skill ought to be exerted for universal good; every man has owed much to others, and ought to repay the kindness that he has received."

"If men were all virtuous," returned the artist, "I should with great alacrity teach them to fly. But what would be the security of the good if the bad could at pleasure invade them from the sky? Against an army sailing through the clouds, neither walls, mountains, nor seas could afford security. A flight of northern savages might hover in the wind, and light with irresistible violence upon the capital of a fruitful region. Even this valley, the retreat of princes, the abode of happiness, might be violated by the sudden descent of some of the naked nations that swarm on the coast of the southern seas!"

"A flight of northern savages" was a very good shot at futurity.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," August 24th, 1915.

His Majesty the King has been graciously pleased to award the Victoria Cross to the undermentioned officer, in recognition of his most conspicuous bravery and devotion to duty in the field:—

CAPTAIN LANOE GEORGE HAWKER, D.S.O., Royal Engineers and Royal Flying Corps.

For most conspicuous bravery and very great ability on July 25th, 1915, when, flying above —, he attacked three German aeroplanes in succession. The first managed eventually to escape, the second was driven to ground damaged, and the third, which he attacked at a height of 10,000 feet, was driven to earth in our lines, the pilot and observer being killed. The personal bravery shown by this officer was of the very highest order, as the enemy's aircraft were armed with machine guns, and all carried a passenger as well as the pilot.

[Captain Hawker, who is a very young officer for his rank, had already distinguished himself by destroying on April 19th an airship shed at Gontrode, in Belgium. In the course of this action he very cleverly used a German captive balloon as a shield, by laying a stymie with it to the German fire from the ground. He has shown marked ability and bravery on various other occasions, and his rapid promotion has been well deserved. A point worthy of note in the communiqué is the censoring of a name evidently mentioned in the official War Office note.—Ed.]

* * *

ADMIRALTY, AUGUST 24TH.

ROYAL NAVAL AIR SERVICE.—The following have been entered as Probationary Flight Sub-Lieutenants for temporary service, and appointed to "President," additional, for R.N.A.S.:—A. P. Hann, to date August 21st; E. L. Pralle, H. G. Holden, August 16th.

WAR OFFICE, AUGUST 24TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Flying Officers.—Sec. Lieuts. R. H. Carr, F. Dunn, and E. R. Scholefield, all S.R. (April 27th); Sec. Lieut. C. Gallie, R. Sc. Fus., and to be sec'd. (June 20th); Sec. Lieut. W. V. Strugnell, Hamp. R. (June 27th); Sec. Lieut. R. Collis, E. Surr. R. (June 20th); Sec. Lieut. H. A. Cooper, S.R. (July 13th); Lieut. N. M. Martin, 38th King George's Own Central India Horse, I.A.; Temp. Sec. Lieut. G. N. Teale, 8th Buffs (E. Kent R.), and to be transferred to Gen. List; Sec. Lieut. G. Mountford, 5th (T.) N. Staff. R.; Sec. Lieut. G. E. H. Fincham, S.R. (August 14th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on prob.):—L. F. Hursthouse, W. P. Cort (August 5th); E. W. Barrett (August 7th); E. A. Cave (August 9th).

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From the "London Gazette," August 25th, 1915.

WAR OFFICE, AUGUST 25TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The following Sec. Lieuts. (on prob.) are confirmed in their rank:—V. W. Eyre, C. H. Friese-Greene, C. G. Tucker.

To be Sec. Lieuts. (on prob.):—A. Charig, J. S. Castle (August 5th).

* * *

From the "London Gazette," August 26th, 1915.

WAR OFFICE, AUGUST 26TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Squadr. Commrs. to be Wing Commrs., and to be Temp. Lieut.-Cols. while so employed:—Bt. Maj. C. A. H. Longcroft, Welsh R., Capt.

(Temp. Maj.) L. E. O. Charlton, D.S.O., Lanc. Fus., Maj. W. G. H. Salmond, R.A. (August 18th).

Equipmt. Officers.—Capt. A. ap Ellis, W. Rid. Divl. Sig. Co., R.E., T.F. (August 11th); Qrmr. and Hon. Lieut. J. Ramsay, R.F.C., from an Asst. Equipmt. Officer, and to be Temp. Capt. while so employed (August 15th).

Asst. Equipmt. Officers.—Sec. Lieuts. V. W. Eyre, C. G. Tucker, and C. H. Friese-Greene, Spec. Res. (Aug. 13th).

Flying Officers.—Lieut. M. G. F. Richardson, Northd. Fus., Temp. Lieut. L. Y. K. Murray, R.A., and to be transferred to Gen. List, Temp. Sec. Lieut. T. S. Impey, R.A., and to be transferred to Gen. List, Sec. Lieut. C. E. Wardle, Spec. Res. (July 30th); Temp. Sec. Lieut. A. C. Collier, Lanc. R., and to be transferred to Gen. List (August 14th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on prob.):—C. W. Snook (July 14th); T. Marburg (August 11th).

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From the "London Gazette," August 27th, 1915.

ADMIRALTY, AUGUST 27TH.

ROYAL NAVAL AIR SERVICE.—The following prob. Flight Sub-Lieuts. have been confirmed in the rank of Flight Sub-Lieut.:—G. H. Jackson (Feb. 21st); M. J. James (Jan. 24th); A. R. Cox (April 16th).

The following prob. Flight Sub-Lieuts. for temp. service have been confirmed in the rank of Flight Sub-Lieut. for temp. service:—S. R. Watkins (May 2nd); V. Nicholson (May 16th); P. A. Johnston (July 26th); E. P. Hardman (May 2nd).

WAR OFFICE, AUGUST 27TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Wing Adjutants.—Capt. J. A. M. Lang, Sherwood For., and to be seconded (August 2nd); Capt. A. Marshall, D.S.O., 28th Light Cavalry, I.A. (August 12th).

From the "London Gazette," August 28th, 1915.

WAR OFFICE, AUGUST 28TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Flying Officers.—Sec. Lieut. H. R. Johnson, Sp. Res. (August 11th); Temp. Sec. Lieut. H. W. Medlicott, R.A., and to be transferred to Gen. List. Temp. Sec. Lieut. M. H. B. Nethersole, R.A., and to be transferred to Gen. List (August 14th); Sec. Lieut. O. V. Le Bas, Queen's (R. W. Surrey R.), and to be sec'd. (August 16th).

ROYAL REGIMENT OF ARTILLERY.—Capt. to be Maj.:—B. R. W. Beor, and to remain sec'd.

* * *

From the "London Gazette," August 30th, 1915.

WAR OFFICE, AUGUST 30TH.

REGULAR FORCES.—ATTACHED TO HEADQUARTERS UNITS:—

Brig. Commrs.—Col. G. J. FitzM. Soady, I.A., and to be Temp. Brig.-Gen. whilst so employed (August 20th); Brev. Col. H. M. Trenchard, C.B., D.S.O., R. Scots Fus., A.D.C. to the King (extra), and to be Temp. Brig.-Gen. whilst so employed; Brev.-Lieut.-Col. J. F. A. Higgins, D.S.O., R.A., and to be Temp. Brig. Gen. whilst so employed (August 25th).

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointment is made:—

Flight Commr.—Lieut. A. V. Bettington, Sp. Res., and to be Temp. Capt. whilst so employed (August 10th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. R. Johnson is confirmed in rank.

MEMORANDA :—Gnr. J. R. Allan, from Canadian F.A., to be Temp. Sec. Lieut., for duty with Royal Flying Corps (July 1st) (substituted for notification which appeared in "Gazette" of August 19th).

NAVAL.

The following appointments, notified at the Admiralty on August 18th, were omitted in error last week :—

ROYAL NAVAL AIR SERVICE.—Temporary Sec. Lieutenant (9th Battalion Royal Welsh Fusiliers).—P. S. J. Owen, entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of August 17th, and appointed to the "President," additional, for R.N.A.S.

Mr. H. Paget granted temporary commission as Lieutenant Commander (R.N.V.R.), with seniority of July 1st, and appointed to "President," additional.

The following temporary commissions, R.N.V.R., have been granted, with seniority of August 17th.—C. H. Keith, as Lieutenant; F. W. Hill, as Sub-Lieutenant; and A. W. Cassy (ordinary seaman), as Sub-Lieutenant, all appointed to the "President," additional, for duty with R.N.A.S.

* * *

The following appointments were notified at the Admiralty on August 24th :—

ROYAL NAVAL AIR SERVICE.—Temporary Lieutenant Commander (R.N.V.R.).—A. Congreve, to "President," additional, for R.N.A.S., August 23rd.

Temporary Lieutenants (R.N.V.R.).—S. M. Cleverley, E. D. Adams, W. E. Plaister, and the Hon. L. G. Guest, all to "President," additional, for R.N.A.S., August 23rd.

The following temporary commissions have been granted :—Lieutenants (R.N.V.R.).—C. R. Andrews, J. K. Wells, and M. H. Smith, all with seniority of August 23rd, and appointed to "President," additional, for R.N.A.S.

Sub-Lieutenants (R.N.V.R.).—J. M. Burke and L. W. M. Lloyd, both with seniority of August 23rd, and appointed to "President," additional, for R.N.A.S.

Surgeon Probationer (R.N.V.R.).—E. P. Hicks, transferred to R.N.A.S. as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of August 23rd.

The following have been entered as Probationary Flight Sub-Lieutenants, with seniority of August 23rd :—A. V. Bowater and S. P. Martin (temporary).

* * *

The following appointments were notified at the Admiralty on August 26th :—

ROYAL NAVAL AIR SERVICE.—Flight Commander.—J. T. Cull, granted acting rank of Squadron Commander, with seniority of August 22nd.

Mr. R. C. Michell, entered as Probationary Flight Sub-Lieutenant, with seniority of August 25th, and appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on August 30th :—

ROYAL NAVAL AIR SERVICE.—Late Lieutenant (R.N.R.).—J. Hills, restored to Retired List of R.N.R. as Lieutenant Commander, with seniority of March 31st, 1913, and appointed to the "President," for R.N.A.S. (August 28th).

Temporary Lieutenant (R.N.V.R.).—G. S. Allfree, to the "President," additional for R.N.A.S. (August 28th).

Temporary Sub-Lieutenant (R.N.V.R.).—H. J. Arnold, entered as Probationary Flight Sub-Lieut., for temporary service, with seniority of August 27th, and appointed to the "President," additional, for R.N.A.S.

Acting Assistant Paymaster (R.N.R.).—H. Humby, transferred to R.N.A.S. as Probationary Flight Sub-Lieut., for temporary service, with seniority of August 29th, and appointed to the "President," additional, for R.N.A.S.

The following entries have been made :—

Lieutenants (R.N.V.R.).—W. J. Polyblank, L. C. Cox, and H. E. Wimperis, all temporary, with seniority of August 29th, and appointed to the "President," additional, for R.N.A.S.

Sub-Lieutenants (R.N.V.R.).—R. F. Bellamy (temporary), with seniority of August 28th, and L. Middleton (temporary), with seniority of August 29th, and both appointed to the "President," additional, for R.N.A.S.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, with seniority as follows, and all appointed to the "President," additional, for R.N.A.S. :—H. A. J. Wilson (able seaman, R.N.V.R.), August 27th; T. R. Hackman and J. C. Hudson (both August 29th); H. A. Peck (July 23rd); R. G. Gardner (August 29th); and J. R. M. Sadleir (August 30th).

* * *

The Secretary of the Admiralty announced the following casualty on August 25th :—

KILLED, AUGUST 24TH.

McLarty, Flight Sub-Lieut. John, R.N.

* * *

Flight Sub-Lieutenant John McLarty, R.N., was killed while flying over Southampton Water in the neighbourhood of Calshot on the afternoon of August 24th. It was noticed that his machine was in difficulties, and suddenly it fell a distance of about 2,000 ft. into the water, the pilot receiving injuries from which he died very soon afterwards.

Sub-Lieut. McLarty was 23 years of age, and entered the Royal Naval Air Service on May 2nd.

At the inquest held at the Royal Hospital, Haslar, Portsmouth, on August 27th, Flight Sub-Lieutenant Baumann expressed the opinion that the accident was caused by the banking of the machine too steeply when on the turn, and to the pulling out of a nose dive too quickly, causing deceased to be thrown out. He fell about 2,000 ft. in shallow water.

Staff-Surgeon O'Connell, who witnessed the accident, at once went to his assistance, and found that the deceased's spinal cord had been broken.

A verdict of accidental death was returned.

Sub-Lieut. McLarty was buried at Greenock on August 28th.

* * *

The Secretary of the Admiralty made the following announcement on August 26th :—

Squadron Commander Arthur W. Bigsworth, R.N., has destroyed single-handed a German submarine this morning by bombs dropped from an aeroplane. The submarine was observed to be completely wrecked and sank off Ostend.

It is not the practice of the Admiralty to publish statements regarding the losses of German submarines, important though they have been, in cases where the enemy have no other source of information as to the time and place at which these losses have occurred.

In the case referred to above, however, the brilliant feat of Squadron Commander Bigsworth was performed in the immediate neighbourhood of the coast in occupation of the enemy, and the position of the sunken submarine has been located by a German destroyer.

[This communiqué is complicated by a later German communiqué which denies that the submarine was sunk. It is not the custom of German official communiqués (as distinct from their wireless messages) to lie, so that one is left somewhat in doubt until the Admiralty makes a more circumstantial statement. However, in the event of the information proving exact, what is the adequate reward for the pilot? If one Zeppelin is worth a V.C., and one submarine is worth a dozen Zeppelins as a weapon, if not as a source of decoration can be given?

In any case, Commander Bigsworth is to be rewarded.

congratulated on another good piece of work, of which he has a very large amount to his credit already.—Ed.]

* * *

From the "Court Circular," Windsor Castle, August 26th :—

The following officer had the honour of being received by the King this morning, when His Majesty invested him with the Insignia of Companion of the Distinguished Service Order :—

Flight Commander R. E. C. Peirse, R.N.A.S.

* * *

Mr. Balfour, the First Lord of the Admiralty, has addressed the following letter to a correspondent :—

ADMIRALTY, S.W., August 28th.

Dear Sir,—You ask me why the accounts published in this country of enemy air raids are so meagre, while the German narratives of the same events are rich in lurid detail. You point out that while these narratives are widely believed in neutral countries, the reticence of the censored British Press suggests a suspicion that unpleasant truth are being deliberately hid from a nervous public.

Compare the following accounts, which, though the historian would never guess it, relate to the same airship raid :—

GERMAN.

Headlines of "Deutsche Tageszeitung" (Aug. 11th, 1915).

"AIR ATTACK ON THE DOCKS OF LONDON.

"On the night of August 9th-10th our naval airships carried out attacks upon fortified coast-towns and harbours on the East Coast of England.

"In spite of strenuous opposition, bombs were

BRITISH.

(August 10th, 1915.)

The Secretary of the Admiralty makes the following announcement :—

A squadron of hostile airships visited the East Coast last night and this morning between the hours of 8.30 p.m. and 12.30 a.m.

Some fires were caused by the dropping of incendiary bombs, but these were quickly extinguished and

dropped on British warships in the Thames, on the docks of London, on the torpedo-craft base at Harwich, and on important positions on the Humber.

"Good results were observed.

"The airships returned safely from their successful undertaking."

only immaterial damage was done.

The following casualties have been reported : 1 man, 8 women, and 4 children killed; 4 men, 6 women, and 2 children wounded.

One Zeppelin was seriously damaged by gun fire of the land defences, and was reported this morning being towed into Ostend. She has since been subjected to continual attacks by aircraft from Dunkirk under heavy fire, and it is now reported that, after having had her back broken and rear compartments damaged, she was completely destroyed by explosion.

Now it is plain that if one of these stories is true the other is false. Why not then explain the discrepancy, and tell the world in detail wherein the German account distorts the facts?

The reason is quite simple. Zeppelins attack under cover of night, and (by preference) of moonless night. In such conditions landmarks are elusive, and navigation difficult. Errors are inevitable, and sometimes of surprising magnitude. The Germans constantly assert, and may sometimes believe, that they have dropped bombs on places which, in fact, they never approached. Why make their future voyages easier by telling them where they have blundered in the past? Since their errors are our gain why dissipate them? Let us learn what we can from the enemy; let us teach him only what we must.

Nobody will, I think, be disposed to doubt that this reticence is judicious. But the question may still be asked whether it is used not merely to embarrass the Germans, but unduly to re-assure the British. How ought



Photograph by F. N. Birrell, 97, Percy Road, Shepherd's Bush, W.

AT THE GRAHAME-WHITE SCHOOL; LEFT TO RIGHT, TOP ROW :—1, Prob. Flt. Sub-Lieut. A. Gammon; 2, Instructor J. S. B. Winter; 3, Prob. Flt. Sub-Lieut. M. Blake; 4, Surgeon J. H. Hadden; 5, Instructor Marcus D. Manton; 6, Prob. Flt. Sub-Lieut. H. Tyndale-Biscoe.

BOTTOM ROW :—7, Prob. Flt. Sub-Lieut. E. L. Ford; 8, Prob. Flt. Sub-Lieut. S. G. Beare; 9, Prob. Flt. Sub-Lieut. P. Roach-Pierson; 10, Prob. Flt. Sub-Lieut. L. de G. Sievking; 11, Prob. Flt. Sub-Lieut. L. E. Murray; 12, Prob. Flt. Sub-Lieut. G. Smethurst; 13, Prob. Flt. Sub-Lieut. E. W. Corry; 14, Prob. Flt. Sub-Lieut. J. A. Saddler.

we to rate the Zeppelins among weapons of attack? What have they done? What can they do?

To this last question I do not offer a reply. I cannot prophesy about the future of a method of warfare which is still in its infancy. I can, however, say something of its results during the past.

That it has caused much suffering to many innocent people is unhappily certain. But even this result, with all its tragedy, has been magnified out of all proportion by ill-informed rumour. I am assured by the Home Office that during the last twelve months 71 civilian adults and 18 children have been killed, and 189 civilian adults and 31 children have been injured.

Judged by numbers this cumulative result of many successive crimes does not equal the single effort of the submarine which, to the unconcealed pride of Germany and the horror of all the world, sent 1,198 unoffending civilians to the bottom in the "Lusitania." Yet it is bad enough, and we may well ask what military advantage has been gained at the cost of so much innocent blood.

The answer is easily given. No soldier or sailor has been killed; seven have been wounded; and only on one occasion has damage been inflicted which could by any stretch of language be described as of the smallest military importance. Zeppelin raids have been brutal; but so far they have not been effective. They have served no hostile purpose, moral or material.

Yours faithfully,

(Signed) ARTHUR JAMES BALFOUR.

[One may again point out that a general idea of the area raided would relieve many people of anxiety concerning friends on the East Coast. For instance, if Newcastle were bombed the Germans would hardly think it was Hull, and if the Admiralty said it was "Newcastle district" it would relieve those who have friends at Dover, or Yarmouth, or Hull. Similarly if East London were mentioned, the Germans would know that much anyhow, and it would relieve those with friends in Newcastle.—Ed.]

* * *

As the result of a statement made in the "Daily Mail" of August 26th the London News Agency is officially informed that there is no truth in the statement that rooms have been set aside at the Board of Education for the use of Mr. Winston Churchill in connection with the Air Service.

* * *

An officer writing from Gallipoli describes the process of searching for submarines with the aid of seaplanes. He says:—

"Overhead, droning like a gigantic bumble-bee, a lead-coloured seaplane is methodically searching the depths, up and down, backwards and forwards, like a ploughman making furrows in a field. So low is she that one can plainly see her pilot, while marking her course are puffs of smoke which look like balls of cotton-wool or magic puff balls, that appear suddenly from nowhere with a 'plock,' and drift away on the breeze. This is shrapnel from the Turkish anti-aircraft gun. As her course comes close inshore a burst of musketry and the rattle of a machine-gun shows that she is within range of the Turkish trenches, but, heedless of shrapnel and rifle bullets, she drones along undisturbed, like a huge dragon fly."

* * *

The following has been sent by a reader from a paper called "John Bull":—

"R. L., a petty officer in the Royal Naval Division quartered at the Crystal Palace, would be grateful if some patriotic person in that neighbourhood would teach him to drive a motor-car in his spare time, as he wishes to get into the Motor Transport. In view of the news that the R.N.A.S. is to be abolished, probably many of them would like to do the same."

One awaits with interest official confirmation of the abolition of the R.N.A.S.

MILITARY.

His Imperial Majesty the Emperor of Russia has been graciously pleased to confer, with the approval of his Majesty the King, the undermentioned rewards for gallantry and distinguished service in the field:—

THE ORDER OF ST. GEORGE, 4TH CLASS.—Sec. Lieut. W. H. Dyke Acland, R. 1st Devon Yeo. (T.F.) (attd. R.F.C.).

[Mr. Acland was the officer who safely conducted his passenger to earth in a burning Vickers biplane set on fire by a German shell.—Ed.]

THE ORDER OF ST. ANNE, 3RD CLASS, WITH SWORDS.—Major and Bt. Col. H. M. Trenchard, C.B., D.S.O., **A.D.C.**, R. Scots Fusiliers, and R.F.C.

[Colonel (now General) Trenchard has commanded an R.F.C. Wing in France with high distinction.—Ed.]

Major (tempy. Lt.-Col.) T. I. Webb-Bowen, Bedfordshire Regt. and R.F.C.

[Colonel Webb-Bowen is another distinguished organising officer.—Ed.]

THE ORDER OF ST. STANISLAS, 3RD CLASS, WITH SWORDS.—Capt. and Bt. Maj. C. A. H. Longcroft, Welsh Regt. and R.F.C.

[Major (now Colonel) Longcroft is a notable pilot and a highly efficient commanding officer.—Ed.]

THE ORDER OF ST. ANNE, 4TH CLASS, INSCRIBED "FOR VALOUR IN WAR."—Sec. Lt. I. T. Lloyd, S. Wales Borderers and R.F.C.

CROSS OF THE ORDER OF SAINT GEORGE, 4TH CLASS.—354 Sgt. S. C. Griggs, No. 5 Squadron, 2nd Wing, R.F.C. 031 Cpl. J. N. Rogers, No. 1 Res. A. Squadron, Ad. Wing, R.F.C.

MEDAL OF ST. GEORGE, 2ND CLASS.—Sgt. E. C. Rumford, No. 2 Sqdrn. 1st Wing, R.F.C.

MEDAL OF ST. GEORGE, 3RD CLASS.—1692 1st Cl. Air Mechanic T. E. Sutcliffe, No. 5 Sqdrn., No. 2 Wing, R.F.C.

There are no restrictions as to the occasion on which these decorations may be worn.

* * *

The following corrections in the Casualty Lists were announced on August 24th:—

Officer previously reported Missing, now Officially reported Prisoner of War.

Weir, Lieut. A. G., Royal Flying Corps.

Officer previously Officially reported Missing, now Unofficially reported Wounded and a Prisoner of War.

Reid, Second Lieut. W., Royal Flying Corps.

Officer previously Officially reported Missing, now Unofficially reported to be Interned in Holland.

Gaye, Capt. A. D., Bedford Regt. and Royal Flying Corps.

[Considering that Holland is within 15 hours by post of England it seems a trifle strange that the notification of Capt. Gaye's internment should still be "unofficial," especially as Great Britain has a Minister at the Hague as well as other persons in Government employ in other parts of Holland.—Ed.]

* * *

The following casualties in the Expeditionary Force were reported on August 29th under date August 22nd: MISSING.

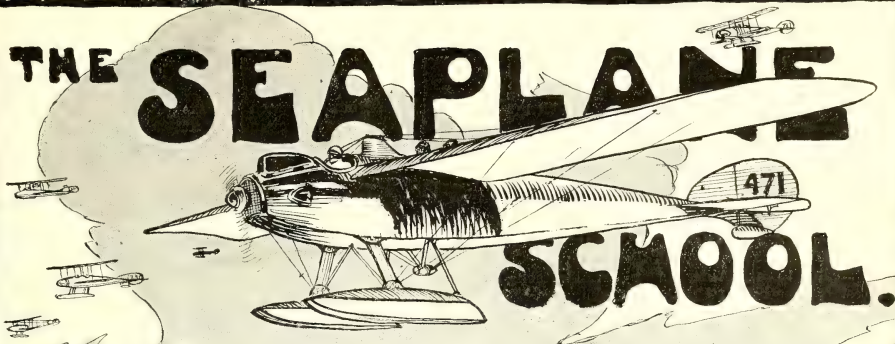
Gallie, Sec. Lieut. C., R. Scots. Fus., attd. R.F.C.

Wallace, Sec. Lieut. W. M., Rifle Brig., 5th Bn., attd. R.F.C.

* * *

Lieutenant W. M. Wallace, reported missing, is the Cambridge and Scottish International Rugby full-back. In the early days of war Mr. Wallace was granted a commission in the 2nd Battalion, the Rifle Brigade, and saw a good deal of fighting in France. Subsequently he

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transferred to the 2nd Squadron, Royal Flying Corps, as an observer.

* * *

The following casualty in the Expeditionary Force was reported from General Headquarters on August 30th, under date August 24th:—

WOUNDED.

Nagel, Lieut. E. R. D., R.F.A., att'd. R.F.C.

* * *

The Field-Marshal Commanding the British Forces in France reports as follows:—

AUGUST 30TH.

Both on the 18th and 21st we succeeded in shooting down enemy aeroplanes. On the 25th our heavy artillery set alight a railway train at Langemarck Station, and on the same evening our Royal Flying Corps co-operated with our Allies in an aerial attack on the Forest of Houthoust (Houthoult), which was successfully carried out without the loss of any machines.

* * *

It is not clear from the notice in the "Gazette" of the 30th whether General Soady is imported from the Indian Army to command a Flying Corps Brigade, but it is evident from the appointments of Generals Trenchard and Higgins that the R.F.C. is in future to be divided into Brigades. The promotions will be welcomed cordially by all who know the highly valuable work done by these officers in the past, and one hopes that under the new scheme of expansion their ability may find still greater scope.

The fact that the expansion of the R.F.C. should be so great as to necessitate its division into brigades—in the manner suggested, by a curious coincidence, in this paper only last week—shows that even if the supply of aeroplanes is not so rapid as it might easily become under efficient technical management, there is, at any rate, some appreciable progress being made.

* * *

It is with very great regret that one records the death of Captain G. W. Mapplebeck, R.F.C., who was killed on Tuesday, August 24th, in an accident at Joyce Green, near Dartford. It is understood that he was killed in landing on a Morane monoplane of the ordinary type.

Gilbert William Mapplebeck was born at Liverpool on August 26th, 1892, and took his certificate, No. 386, on a Deperdussin monoplane at Hendon on January 7th, 1913. He was gazetted to a lieutenancy in the 4th King's Liverpool Regt. (Special Reserve) on December 6th, 1912, and was appointed to the 4th Squadron, R.F.C., under the late Major Raleigh on December 17th, 1913.

During his period of tuition at the late Deperdussin school he displayed great promise as a pilot, and though by no means a small man he handled the little 35-h.p. Dep. with ease and certainty.

Soon after his appointment to the R.F.C. he showed his exceptional ability, and he was, one believes, the first Army aviator to turn a B.E. upside down to see whether the machine would stand the strain. On this occasion he retired to a distant part of Salisbury Plain to experiment unseen, and said nothing about his tests until some time afterwards. Being by nature of a mechanical turn of mind, he always looked after his aeroplanes himself, with the result that they were always in first class order, and thus he could safely try experiments which would have smashed the machines of less careful pilots. Also he possessed beautiful hands and so put the least possible strain on his machines.

When the R.F.C. went to France in August, 1914, he crossed with the rest and soon distinguished himself on active service. He was the hero of the official "Eye-witness's" story of the destruction of a train of German ammunition lorries which were hit by bombs dropped by a British aviator onto a narrow road through a forest, and of the same writer's story of the pilot who was

wounded in almost the first recorded duel with a German pilot, and landed safely though unconscious.

On this occasion he was alone in his machine and was armed with bombs only against the rifle carried by the German passenger. His wound would have proved fatal but for a severed muscle acting in an extraordinary way as a tourniquet on an artery. He was laid up for some three months, but struggled back to duty as soon as ever he was able. While in hospital he was mentioned in despatches and given a D.S.O., and a commission in a Regular battalion.

Very shortly after his return he went out under the most unfavourable conditions on a bomb raid and was shot down together with two other pilots. One of the others died of his wounds in Lille and the other was taken prisoner. Mr. Mapplebeck managed to escape into an empty house in the suburbs of Lille till the search for him was over. Aided then by a Frenchman, he penetrated in disguise into Lille itself, and after hiding for ten days or so, and procuring some money with the help of a local man, he started to walk across Belgium to Holland, taking with him as a trophy the German placard posted at Lille advertising for his arrest.

On the way he passed as a Belgian workman, and gathered a considerable amount of useful information. On getting into Holland he passed as an English electrician who had escaped from Antwerp, and so managed to get across to England without being interned, arriving in London on the very day he was reported in the Casualty List as a prisoner of war. This was perhaps the most adventurous incident which has befallen any R.F.C. officer.

After a very brief stay in England he returned to his squadron in France, and continued to do such good work that despite his youth he was specially promoted to Flight-Commander and temporary Captain. Thereafter he was sent to England to command an aerodrome at which R.F.C. officers on probation were trained and passed as suitable for active squadrons, an appointment which showed the high esteem in which his judgment was held by his superiors.

He was by nature ambitious, but his ambition was of the right sort, for he determined to succeed on his merits and not by favour or influence. His skill and ability as a flier were recognised by everyone in the R.F.C., but beyond being a mere pilot he was a hard-working and efficient officer, a close student of aerodynamics, and of practical aeroplane work, as well as of military lore of all kinds. Of his personal popularity the writer cannot speak, but he was so thorough and so intensely in earnest over his work that quite possibly he missed achieving general popularity. There is, however, no doubt as to the sterling worth of his character, nor as to his mental ability, both of which were of the highest order, and quite exceptionally so for his age.

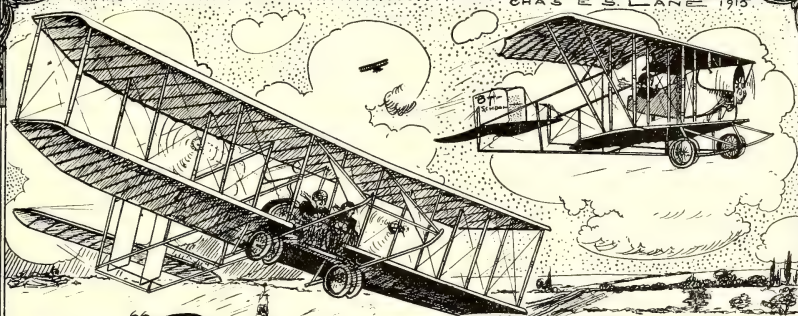
It is the more regrettable, therefore, that he should have lost his life in a mere accident at home, and on a machine which has over and over again been stigmatised as dangerous to fly.

To his family one offers the deepest sympathy in the loss of one who, had he been spared, would undoubtedly have exercised a strong influence on the development of military aviation.

The remains of the late Captain Mapplebeck were interred in Streatham Cemetery at noon on Saturday.

The funeral was attended by the dead officer's father, mother, sister and brother, the last named, Second Lieut. T. G. Mapplebeck, also of the King's Liverpool, still suffering from wounds received at Neuve Chapelle. His former schoolmaster, the Rev. G. H. Stenning, travelled from the Isle of Man to attend the ceremony. The Royal Flying Corps supplied a firing party, under Captain Cox.

General Henderson was present, also Major Warner,



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Major Cogan, Colonel Longcroft, Captain Penn Gaskell, Captain Leighton, and Lieut. Wynne.

The ceremony was conducted by the Rev. Father J. Bennett, assisted by the Rev. Father W. Bradley, both of the Clapham Roman Catholic Church. Many very beautiful wreaths were sent, the contributors including the officers of the Royal Flying Corps, the non-commissioned officers and men of the corps, Colonel Ramford and the officers of the Orchard Convalescent Hospital, Colonel Longcroft, Major Herbert, and Baron and Baroness d'Erlanger.

* * *

Capt. Robert Maxwell Pike, Flight Commander, R.F.C., killed in Flanders on August 9th, was the second son of Mr. Robert Lecky Pike, D.L., of Kilnock, Co. Carlow, and was 28 years of age. Born on August 30th, 1887, and educated at Harrow, he entered the Navy in 1902. Three years later he was invalided out on account of his having his knee joint taken away, which left him with a stiff leg for life.

In September, 1914, soon after the outbreak of the war, he joined the Royal Flying Corps and at once displayed ability. He took his pilot's certificate after a month's training, and quickly became a capable flier. He remained in England until the end of January, when he went to the front. Early in April he was promoted flight commander and temporary captain.

It is stated that he left Hendon on a new "pusher" scout built by the Aircraft Mfg. Co., but was brought down in German territory before landing in a British ground. It is, however, impossible to verify the absolute accuracy of the story. There was a delay of a week before he was officially reported missing, and his death was unofficially reported some days before the official announcement.

* * *

As nothing further has been heard about Captain B. T. James, R.E., who was officially reported as missing some weeks ago, it is to be feared that he has been killed, the more so as it is reported by those returned from Flanders that his machine was seen on the ground wrecked and on fire by other pilots.

Baron Trevenen James was born in London on April 20th, 1889. He took his certificate No. 230 on a Howard-Wright biplane at Hendon on June 4th, 1912. His gazette as 2nd lieut. R.E. is dated January 23rd, 1912, and his appointment to the R.F.C. April 16th, 1913. He was appointed Flight-Commander and temporary Captain on November 28th, 1914.

An engineer officer of high ability, he devoted himself to the development of wireless telegraphy on aeroplanes as soon as he joined the R.F.C., and to him is largely due the excellent progress made in this department prior to the war, which has resulted in very good work with far-reaching effects being done by our wireless machines on active service—as officially recorded when Capt. Lewis was most deservedly given a D.S.O. Curiously enough Capt. James never obtained any reward for his own distinguished services.

Besides being a wireless specialist Capt. James was a sound and reliable pilot, and was, moreover, possessed of a keen sense of humour, as some may remember who know of the incident when he was told off during the manoeuvres of 1913 to take the then Secretary of State for War for a flight at short notice in accordance with that official's earnest desire to be in the air when the King and Queen arrived to visit the camp of the White Army's air scouts.

At the outbreak of war Capt. James crossed to France with the first R.F.C. contingent and continued there the good work he had done at Farnborough and elsewhere.

The loss of so brilliant a young officer is deeply to be regretted, but his family may find some consolation in

the fact that before his death he was able to achieve results in his own special field of activity which have had great influence on the course of aerial warfare.

* * *

Lieutenant W. W. A. Burn, Royal Flying Corps, who is reported from the Persian Gulf missing and probably killed, and whose name was included in the casualty list published on August 24th, was a member of the New Zealand Staff Corps. He was attached to the Christchurch area, under the universal training scheme, and came to England early in 1911 to be trained. After doing the course for mounted infantry at Longmoor he learnt to fly at the British school on Salisbury Plain, and afterwards at the Central Flying School. Returning to New Zealand at the outbreak of the war, he held himself ready for duty when called upon, and only recently went to Egypt, and thence to the Persian Gulf.

* * *

As it is now several weeks since the event occurred, and therefore it must be well known to others than the Dutch authorities, it may be well to place on record the fact that Lieut. G. H. Eastwood, R.F.C., has escaped from the Fortress of Wierickeschans, Holland.

He was interned there with sundry other British officers who recently withdrew their parole and were removed from a state of semi-liberty at Groningen to closer confinement in the fortress. Letters from the fortress state that the officers are well if strictly treated, and that owing to many sentries, a large moat, much barbed wire, and quantities of electric light at night, escape is as difficult a problem as it would be from a German prison camp. Evidently our good friends the Dutch believe in fulfilling the letter of international law, despite the bad example set them by their neighbours to the eastward.

* * *

The Wexford "Free Press" says:—"Mr. Michael Keegan, son of Mr. Keegan, stationmaster, Glenmore, has been promoted to the rank of lieutenant in the Royal Flying Corps. Mr. Keegan took part in some of the air raids on the enemy's positions in the early part of the year, and that his courage and efficiency on these expeditions did not fail to command the attention of his superiors was evidenced by his promotion. On one occasion he was compelled to descend near the enemy's line, but escaped. Mr. Keegan, who is brother of Mr. Jim Keegan, formerly of the New Ross Geraldines, was himself a promising caman wielder, and played with the Rathgarogue junior hurling team."

[For the benefit of the ignorant Saxon one may mention that "hurling" is a glorified and fearfully exciting species of hockey played with 22 men a side and a minimum of rules. The caman is a hockey stick of the dimensions of a war club, and is perhaps responsible for the fact that casualties are heavy and that matches frequently finish with 11 a side, as in ordinary hockey.—Ed.]

* * *

A German aviator, who was a prisoner in the Frith Hill Compound at Frimley, has escaped. He is described as of about 5 ft. 8 in. in height, dark complexion, with black moustache, stockily built, and wearing a brown cord suit, with dark cloth cap.

This is the first escape reported from this camp, in which some thousands of prisoners have been confined, but one would expect an aviator to fly from imprisonment before anyone else.

* * *

It is reported that on August 26th an aeroplane accident occurred at Reading. A "shorthorn" Maurice Farman biplane, Renault engine, piloted by an N.C.O. of the Royal Flying Corps, was travelling across country

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when engine trouble occurred. The pilot descended in a spiral, landed in front of a hedge and charged through it. The machine turned completely head over heels into the road, but fortunately the pilot slid out in time and was unhurt. It is not clear exactly what happened, but it rather looks as if the pilot failed to visualise correctly the exact path the machine would follow in the air and therefore landed without sufficient room to pull up.

A letter from a sergeant in the A.S.C. to a friend in Somerset, which was published in certain daily papers, says:—"Our anti-aircraft guns generally have a 'pop' at our German visitors on the return journey back to their lines. . . . Some close neighbours of ours succeeded in bringing down one of the five which set out this week to demonstrate on the East Coast what the boasted Hun frightfulness really can do in the way of waking babies up from their nursery slumbers!"

[If the sergeant's report is accurate, the news is very welcome. Still, it is a little indefinite because he does not state what type of aircraft was brought down. It is unlikely that a Zeppelin would get over the firing line, so possibly he refers merely to an aeroplane raid.—Ed.]

A dispatch rider named Wright, of the Royal Flying Corps, was fined two guineas at Aldershot for riding a motor-cycle in Farnborough to the common danger.

The accused ran into a motor-car, and it was sworn that his pace was most dangerous.

Superintendent Davis said that he had had complaints from public bodies and private individuals concerning the way that these cycles and cars were driven, and the military authorities had informed him that there was no real necessity for it.

The authorities did not desire that the public should be endangered.

[Motor cycles certainly are dangerous vehicles, but if certain pedestrians with suicidal tendencies could imagine the cold shiver of fear which passes up a motor-cyclist's spine when an absent-minded bookworm steps into the road they would not be so sure that the motor cycles were more dangerous than they are themselves.—Ed.]

A reader sends the following cutting from the paper "John Bull" already mentioned:—

"(W. G. M. (W. Ealing) should send his suggestion for attacking Zeppelins from aircraft above with 'geared incendiary bombs which run down wire roping as required,' to the experts of the War Office."

[What is wanted is not a new kind of bomb, but an instrument which will indicate to the nearest cubic mile the locality at any moment of a Zeppelin which is travelling in the dark somewhere through a slice of air two miles thick, about 100 miles broad and 300 miles long, i.e., a lump of air containing about 60,000 cubic miles, every mile of which may have to be searched under present conditions before the Zeppelin is found. It is well to remember also that it is travelling at about 50 miles an hour all the time.]

FRANCE.

The communiqué of August 24th says:—

A squadron of seven aeroplanes bombarded on the night of the 23rd the stations of Tergnier and Noyon. The aeroplanes dropped over 80 projectiles. Several fires were seen to break out in the station of Tergnier. All the machines returned.

The communiqué of August 25th says:—

One of our aeroplanes last night bombarded the railway station of Lörrach, in the Grand Duchy of Baden.

Lörrach, which is $4\frac{1}{2}$ miles north-east of Basel, Switzerland, is a centre of industry, chiefly notable in times

of peace for the manufacture of cottons. The Berlin communiqué published yesterday reported an air raid on Offenbourg, also in Baden.

A later communiqué of August 25th says:—

An Aviatik dropped four bombs on Vesoul (west of Belfort), slightly injuring a woman and a child. The material damage done was insignificant.

A special communiqué from the Dardanelles of August 25th says:—

On August 20th our air squadron successfully bombarded the landing place at Acba Shiliman, on the European coast to the north of Nagara, in spite of a violent fire from a number of the enemy's batteries.

One of our aeroplanes sank a big Turkish transport at her moorings.

The afternoon communiqué of August 26th says:—

During the 24th one of our aeroplanes bombarded the station of Offenbourg, an important junction in the Grand Duchy of Baden.

Yesterday a flotilla of four detachments of aeroplanes, 62 in number, flew over the Dillingen ironworks (a shell and armour plate factory, north of Saarouis), upon which were thrown with precision over 150 bombs, including 30 of large calibre.

The evening communiqué of August 26th says:—

During the day of the 25th our aeroplanes bombarded in the Woevre the German cantonnements at Dannes and Baussant, causing a fire. The railway stations and the German bivouacs at Grande Chatel, Cernay, and Fleville, in the Argonne, the station of Tergnier and the aviation park at Vitry, in Artois, and the railway station of Boisieux were also bombarded by our machines.

A bombardment by aeroplanes of the French, British and Belgian Armies and the French and British Navies, acting in concert, 60 aeroplanes in all, was effected against the Forest of Houlthulet, where several fires broke out. All the aeroplanes returned.

During the night of the 25th one of our air squadrons dropped 127 bombs on the station of Noyon.

The communiqué of August 27th says:—

Yesterday our aeroplanes bombarded in the Woevre Saint Baussant and Essey; in the Argonne the stations of Ivory and Cierges were also bombarded by our machines, following an attack by German aircraft on Clermont-en-Argonne, where the bombs dropped by the Aviatiks caused no loss of human life or material damage.

On the night of August 26th one of our aircraft dropped about 10 bombs on the asphyxiating gas factory at Dornach.

On the morning of August 27th a squadron of aircraft bombarded the station and the electrical installation at Mülheim, in the Grand Duchy of Baden. All our machines returned safely.

The afternoon communiqué of August 28th says:—

Our aeroplanes during Friday night bombarded the railway station at Chatel, in the Argonne.

The evening communiqué of August 28th says:—

This morning, shortly before 10 o'clock, six German aeroplanes ascended, three from the region of Soissons and three from the region of Compiègne, and flew in the direction of Paris. They were not able to attain their objective and only threw bombs on Nogent-sur-Marne, Montmorency, Mont Fermeil, Rubécourt, and Compiègne. Nobody was hurt except at Compiègne, where two nurses and a child were killed.

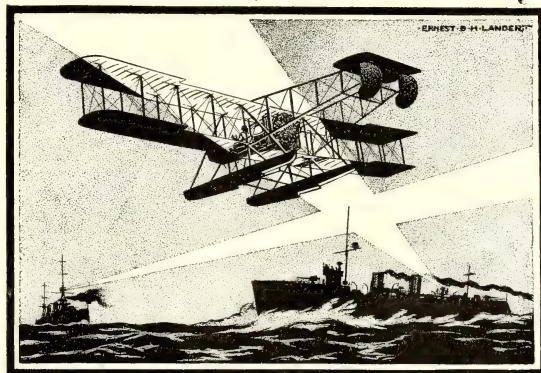
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Immediately the enemy aeroplanes were sighted they were bombarded at different points and were chased by our machines. The commander of one of our squadrons pursued one of the German machines at a height of 10,700 ft., and brought it down to the north of Senlis. The pilot was incinerated and his machine was destroyed by fire.

* * *

The afternoon communiqué of August 29th says:—

Our aeroplanes bombarded last night the railway station and the hutments of the enemy at Grand Pré, as well as the hutments at Moncheutin and Lancon, in the Argonne.

* * *

It is reported that a hospital of 40 beds has been opened at Viry-Châtillon, near Juvisy, for the special accommodation of wounded aviators.

* * *

It is reported from Paris that on August 24th M. Chemon, military aviator, was descending in a field on the previous day, where his wife was awaiting him, when his machine burst into flames and fell on the Ceinture railway, near the Cugny station. The occupants of the machine were burnt to cinders.

* * *

M. Gilbert, who recently escaped from internment in Switzerland, has been sent back to Switzerland by the French Government to be reinterned. This decision was made by the French Cabinet after considering the complaint made by the Swiss Government to the effect that the letter in which M. Gilbert withdrew his parole reached them too late to enable them to take measures to prevent his escape.

* * *

The majority of the readers of THE AEROPLANE will doubtless have read the long and graphic description of a flight over the French lines by Mr. Ralf Pulitzer, of the "New York World," a reprint of which has appeared in most of the London papers. Mr. Pulitzer describes the machine in which he flew as a "double-motored battle-plane," and it may now be permissible to state that this machine was one of the new twin tractor

Caudron biplanes which have done some very fine work lately and are sufficiently well known to the Germans to make it safe to illustrate them. These machines are on general Caudron lines, but with an engine mounted between each pair of wings, sufficiently far apart to allow the propeller tips to clear each other.

The usual "grasshopper" type nacelle is fitted to carry pilot and passenger, and a gun is placed where the engine "ought to be." The machine is usually fitted with Lerhôte engines, but it is adaptable to Anzani and other radial motors.

It is extremely gratifying that a firm which has done such hard and useful work, both in England and France, should have the distinction of placing in the air the first twin-engine machines to be used by the Allies on the Western front.

GERMANY.

The communiqué of August 24th says:—

Near Loo, south-west of Dixmude, the day before yesterday, a French biplane was shot down by one of our army aviators.

* * *

The communiqué of August 26th says:—

Two hostile air squadrons yesterday dropped bombs on the Saar Valley above and below Saarlouis. Several persons were killed and wounded, but the material damage was unimportant.

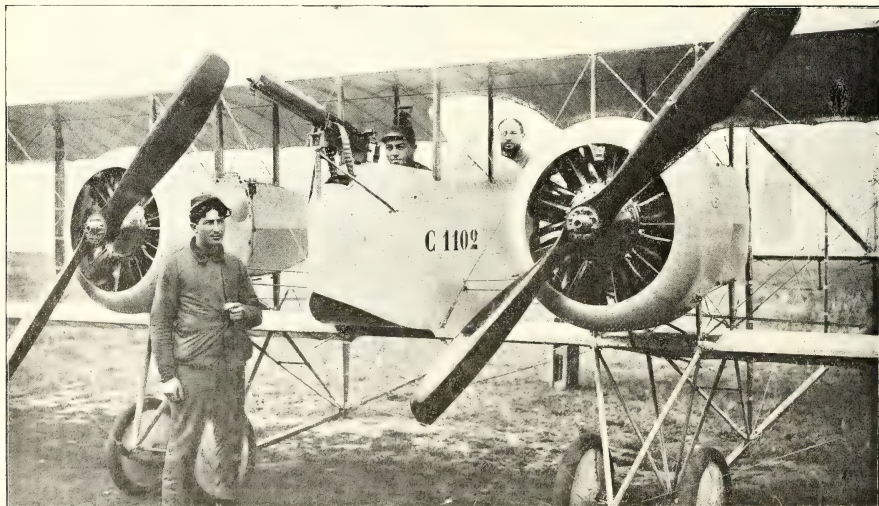
Before their start the air squadrons were successfully attacked by our aviators in the aerodrome at Nancy, and, moreover, the squadrons lost four machines.

One fell down in a burning condition near Bolchen, pilot and observer being killed; one was captured by us with its occupants near Remilly, a third machine was forced to land by a German battle-aeroplane near Arracourt, north of Lunéville, before the French lines, and was destroyed by our artillery; a fourth aviator landed under the fire of our anti-aircraft guns near Moirvrons, south of Nomeny, behind the enemy lines.

* * *

The communiqué of August 28th says:—

Enemy aviators unsuccessfully bombarded Ostend, Middlekerke, and Bruges.



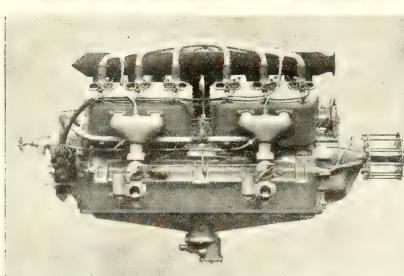
A French twin-engine battle aeroplane.

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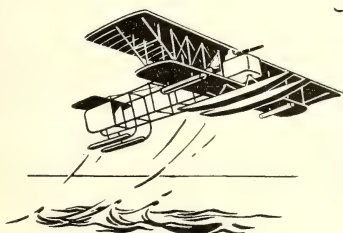
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At Mülheim in Baden three civilians were killed by bombs dropped by an aviator.

* * *

A German Admiralty communiqué issued on August 28th says :—

The British Admiralty announced on August 27th that a German submarine was destroyed and sunk off Ostend by a British seaplane; this is inexact. The submarine was attacked, but was not hit, and returned to port undamaged.

* * *

A message received by wireless from Berlin on August 24th says :—

"Novo Georgievsk, after having been surrounded for ten days, has surrendered. Durborough secured everything in his last attack, under brilliant light of sky rockets and balloon."

[If the message is to be taken literally, the illumination could not have been very bright, as hydrogen burns with a blue flame. Also, the expedient of making bonfires of balloons must be rather expensive even in these days!—Ed.]

* * *

A Berlin telegram received via Holland states that on August 23rd a hostile aviator dropped bombs on the town of Offenbug, which is outside the zone of operations. The material damage caused was insignificant. Twelve persons were wounded, some of them severely.

Offenbug is 12 miles south-east of Strassburg.

RUSSIA.

It was reported from Petrograd on August 30th that to the north of Vlodava (43 miles south of Brest Litovsk) a Russian aeroplane was attacked by three German Albatrosses, one of which was brought down by the machine-gun fire, while the other two fled.

* * *

A Central News correspondent in Russia narrates a story told by Alexis Semanoff, a Russian military aviator, to a journalist. At any rate it shows brilliant imagination :—

"I and my observer received an order to make a reconnaissance and took to the air. At a height of 1,500 yards

we were over the positions of the enemy and became the object of a terrible artillery fire. The shrapnel explosions created such a cloud of smoke as to obscure the view for a time.

"In two or three minutes the danger zone was passed, and we performed our task. At R— railway station we were aware that there were large stores of artillery material, and as we arrived there a train was just coming in.

"I made a circle round the station, and the observer threw two bombs, one of which struck a large building in which shells were stored. This store was blown up in a moment. Long tongues of flame and clouds of smoke appeared.

"The concussion was the cause of the destruction of another store containing pyroxilin, bombs, and illuminating rockets. The last explosion caused a huge cloud of smoke to appear, and it reached a height of 700 yards. Our machine was turned over and over many times.

"Beneath us there was a panic, and many of our prisoners took advantage of the opportunity and ran away. They afterwards stated that the explosion was so tremendous that it resembled the noise of an earthquake.

"A reconnoitring party which afterwards visited the scene learned that the store contained artillery shells and ammunition in boxes. The explosion deprived the Germans of a large quantity of ammunition and greatly hindered the operations of the enemy on our front."

The aviator and observer of this brilliant exploit are to receive the new decoration. [Is it the order of Ananias?—Ed.]

ITALY.

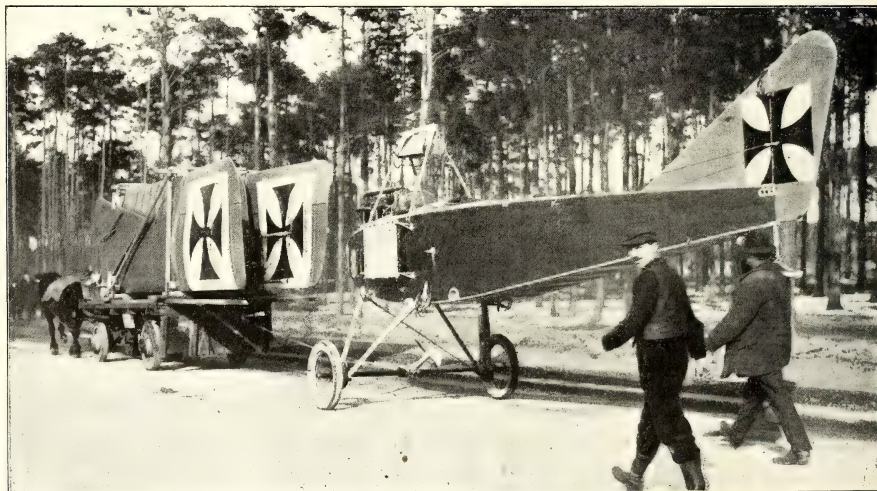
The communiqué of August 24th says :—

On Sunday morning an enemy aeroplane flew over Schio and dropped some bombs, killing a woman.

* * *

The communiqué of August 25th says :—

This morning an Austrian aeroplane flew over Brescia and, successfully evading the shells of our anti-aircraft guns, threw four bombs, killing six persons and wounding several others, all belonging to the civilian population.



An Aviatik biplane being transported by road. Note the claw-brake between the wheels.

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The communiqué of August 27th says :—

On the evening of the same day (August 26th), favoured by a full moon, our seaplanes dropped bombs on the fortified place of Riva, and, escaping the fire of the anti-aircraft batteries of the enemy, returned safely to our lines.

* * *

The communiqué of August 29th says :—

As our aerial reconnaissances show that the enemy was already hastening to repair the damage caused by the recent raids of our airmen over the Aisowitza aerodrome, this was once more bombarded yesterday morning by our flying squadrons. One hundred and twenty bombs were dropped. Two hangars were hit in the centre, and the whole camp was damaged. Here and there fires broke out. Our airmen, although for half an hour over the fire of numerous batteries, returned safely from this daring raid.

* * *

The communiqué of August 30th says :—

Our daring aerial raids, which are always directed towards military objectives, continue with success. Yesterday we bombarded the station at Vogersko, large enemy encampments near Kostange Vica, and ammunition dépôts at Sesana. Our machines were not damaged.

* * *

A correspondent at Schio announces that an Austrian aeroplane was brought down by the anti-aircraft guns defending the Corbin Fort in that neighbourhood on August 15th. More recent official news mentions later aerial attacks against Schio.

The week has been as unpropitious to learners and testers here as in England. Several accidents have been chronicled among their numbers in the home aerodromes in both countries. Two fatalities are being deplored at Taliedo, in the first of which a pupil pilot from Genoa named Camarano lost his life owing, it is supposed, to an error in the use of his control levers.

The other loss was the more grievous economically, as the deceased was a highly useful military pilot just back from the front, charged with testing a military type Caproni.

After a capable flight of about twenty minutes at a good height, the machine suddenly stalled and wing-slipped, and (though it seemed that the pilot was getting control of it again) rushed horribly to destruction.

So finished the short, brilliant aviatorial career of Brigadier Cattaneo, R.R. Carabineers, one of the first pilots of that fine corps. He was trained, if memory does not betray me, barely a year ago at Aviano.—T. S. HARVEY.

BELGIUM.

The communiqué of August 24th says :—

During Sunday night our aviators continued the successful bombardment of the German establishments at Praetbosch and in the Houthoult Forest.

From 11 to 20 tons of explosives and incendiary projectiles were dropped upon the German camps.

[See the French communiqué of the same date.—Ed.]

* * *

It is reported from Amsterdam that recently a raid was made by Allied aviators on the German lines at Bixschote, where 100 bombs were dropped on soldiers in the front trenches.

* * *

It is reported from Amsterdam that on August 28th an Allied aviator raided Ghent and dropped bombs on a building in Denys-Square. The aviator returned unmolested.

HOLLAND.

It is reported from Amsterdam that on August 25th

the German Government made an apology to the Dutch Government for the unauthorised action of a Zeppelin flying over Holland on August 18th.

The apology ascribed the incident to the strong wind, which caused the pilot to lose control of his machine. The "Telegraaf" remarks that the Zeppelins have great difficulties with the wind as they pass over Dutch territory daily.

SWITZERLAND.

The escape from Switzerland of the well-known aviator Gilbert is explained thuswise.

M. Gilbert was quite comfortably settled at Hospenthal on the road to the Gotthard Pass, and the only obligation he had was to wear one of his three uniforms, the hotel people having on their part to guarantee that not more than two of these should be in his bedroom when he was not there. Spring-cleaning being over, no one noticed the third one hidden under the bed one day, and so the fugitive got a good start. No doubt, every consideration having been shown him, the departed guest will strongly recommend the house as a summer resort.—T. S. H.

[Probably his present residence is less desirably open.—Ed.]

SERVIA.

It is reported from Amsterdam, via Vienna, that the Serbian aviators have recently developed great activity over the Banate.

TURKEY.

The communiqué of August 30th says :—

Our aviators who took part in the battle (at Anafarta) successfully dropped bombs on the hostile positions.

* * *

It is reported from Athens that on August 23rd a number of Russian aeroplanes flew over the Asiatic suburbs of Constantinople and dropped bombs. Thirty Turks, eight Greeks, and three Armenians were killed or wounded. The population of the Turkish capital was in a state of panic.

* * *

Mr. Ashmead-Bartlett, writing from the Dardanelles on August 8th, describing the landing of two divisions on the previous day, states that anything in the nature of a complete surprise was impossible owing to the activities of enemy aviators, who frequently fly over the British camp. Still, by the exercise of "superb generalship" the actual landing spot was selected without the enemy having any idea where the blow would fall.

INDIA.

It is reported from Simla that the Mir of Khairpur has presented a military aeroplane for Imperial use.

U. S. A.

An erecting performance of some note was performed on August 9th at the Curtiss Factory at Buffalo. According to an account in an American contemporary—

"In an effort to determine exactly what length of time is required to assemble a complete machine ready for flight, a model JN-3 tractor biplane, 90-h.p. type, was completely assembled in the elapsed time of two hours and fifty-five minutes. This included the building up of the wing panels, doping, cutting cables, and, in fact, the entire operation of building an aeroplane. This feat was witnessed by British officers and by Lieut. W. M. McIlvain, U.S.M.C.

"This machine was immediately crated and shipped along with others of the same type, so that no additional work was necessary. The usual six coats of dope were placed on the fuselage and wings, and other details, such as lining up the motor and wing panels, were given the usual attention. The motor, of course, was not built in this length of time."

[Some hustle! But how did the British inspectors move fast enough to follow the job through?—Ed.]



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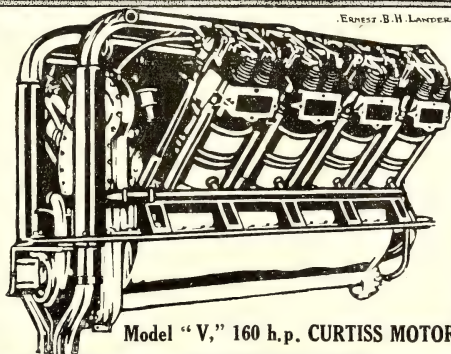
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Efficiency in Production.—(Continued.)

BY ANGLO-AMERICAN.

THE HUMAN FACTOR.

Some managers, or managements, display an appalling ignorance of human nature which is positively astounding. It is passing strange that a man who is so particular about knowing the precise nature of the less important material he handles, such as steel, should be so recklessly indifferent about the nature of the most important material—the human. He wants to know the exact chemical composition, the metallurgical constitution, the specific gravity, the tensile strength, the elongation, the ductility, the malleability, and a host of other things, about the various steels he uses, and yet he is content to know next to nothing about the human nature he is dealing with, or the individual natures of the particular men.

Here is an instance of psychological clumsiness. A man went to apply for a job as a fitter. A friend had fixed up an appointment for him. It was a small general engineering firm (in Canada) in which the senior partner was works manager. Him he interviewed.

The senior-partner-manager sent one of his clerks with the man and told the clerk, "Take this man to Mr. So-and-so (the foreman) and tell him to give him a job." Such tactlessness positively makes one's flesh creep. Of course, the result might be known. It was a foregone conclusion.

The man worked at that shop a fortnight and then got the sack. He had been foisted on to the foreman, who had had to engage him willy-nilly, and he had his knife into the man from the start and he stood no chance. But has not the manager a perfect right to engage a man? Of course he has, and no foreman would, or could logically, dispute it; but where is the foreman who would frankly admit that right in his heart of hearts ungrudgingly?

Foremen regard the "hiring and firing" of men as their own special prerogative, and they strongly resent any trespassing on their sacred preserves. It is the one thing in which they can be absolute little tin gods—and some of them do love to be little tin gods—and a manager ought to know enough about foreman nature to know that.

Besides, as long as the rotten system exists which makes the foreman responsible for the staffing (and strafing) of his shop he will very naturally and justly resent any interference with his arrangements. He may pride himself (with or without reason) on being a judge of men, and may interest himself in selecting them and watching their subsequent performance to see if they justify his first estimate of them. In that case he objects to having rough hands laid on his work of art, and sets to work to show that his choice is better than the manager's, and all the men whom the manager selects turn out worse than those whom the foreman selects. It can easily be worked, and the only thing for the victims to do is either to quit or submit to being side-tracked.

At best, the foreman will take more interest in the men that he has himself engaged than in those whom the manager selects, and the personnel of many shops could be divided into two distinct classes—manager's men and foreman's men—and the former frequently have to fight for their existence. But it must be admitted, on the other hand, that the "manager's men" sometimes presume upon their status and make themselves objectionable.

The point is that these little games and intrigues do not conduce to efficiency. If the foreman is to staff his shop he should have a free hand in it, but a better arrangement is for him to have no say in it at all, then he cannot fill the place with his own cronies nor push men into the more comfortable billets just because they happen to be old pals.

A POSSIBLE SWINDLE.

The Bonus System, moreover, lays the employers open

to a mild swindle on the part of the workman. He has, say, three jobs on hand on all of which he can only just make "time" with no bonus. But, instead of booking his time like that, he can transfer some of the time from two of the jobs on to the third, so as to get bonus on the two and put the third in "debt," making it a scapegoat for the extra time—a reprehensible practice, no doubt, and one which I do not intend to suggest is common or extensively followed, but it is possible with the bonus system as usually worked.

The majority of workmen are reasonably honest, and it seems to be regarded as a point of honour to book time "honestly," and though there are means of combating, or preventing, this little fraud, it would seem a bit invidious to apply them too rigidly even if it could be done. One scheme is to stamp on the "time-card" the time of issuing and completion of the job, and the man is not allowed to start on a fresh job until he has finished the previous one—to the serious detriment of efficiency, because if he has only one job on hand and gets held up on that he has nothing else to go on with and has to wait, unless he returns the time-card to the leading hand and has the job temporarily closed while he goes on with another one. But he may not consider the hold-up serious enough to make it worth while doing that, so he waits.

JAMMED.

For instance, a fitter comes to a part of a job where some drilling is required and he finds the drilling machine occupied, so he waits; whereas if he had another job on hand he could go on with that. And it usually seems to happen that a drilling machine that has been standing idle for days is wanted by several men at once. Is it bad luck or bad work-planning that causes this? So it comes about that, if this scheme of keeping a strict tally on the time-cards could be worked efficiently, it would of itself detract from the general efficiency.

But, however good or useful it might be, it does not appear possible to work it thoroughly, because it seems quite impossible to drive into an Englishman's head the simple fact that an efficient system is a desideratum. If the proposition is put up to him he assents readily enough, but he never acts as if he believes it. If a short cut presents itself by means of which he can make some apparent progress by cutting out a bit of the efficiency system he will take it, regardless of future consequences or of a day of reckoning that he may be storing up.

That is the rock on which all the American efficiency systems are wrecked sooner or later when they venture across the Atlantic, and they always will be unless carefully safeguarded and if left to depend for their successful working upon the individual initiative of every Englishman who handles them.

So long as things are good enough for him to be able to muddle through the immediate present, the Englishman thinks the future does not matter. Why worry? He is almost like the optimist who, after falling out of a thirtieth-storey window of a New York sky-scraper, when passing the tenth storey, shouted to a friend at a window there, "I'm all right so far."

AN AMERICAN LESSON.

We should, in all probability, still be preferring to make an immediate start on turning repetition work on an ordinary lathe, and to muddle through it, rather than spend the—apparently unprofitable—time on the finicky setting of capstan tools if we had not learned a severe lesson from America. And this time-card business is another case in point. Though the shop system may nominally require that the job-card (or "order," whatever its local name may be) and time-card, and the instruction-

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card if there is one, should all, or both, be issued together when the job is issued to the workman, yet if the leading hand happens to be busy when a man goes to him for a job he will snatch up a job-card and say, "Here, do this job." If the workman says, "Where's the time-card?" the leading hand says, "I'll make one out presently. I'm busy just now"—and bang goes the efficiency of the time-card system.

THE UNFAIRNESS OF DAY WORK.

If these "speeding-up" systems are so far from satisfactory as regards efficiency, what can be said about "day work"? If the others are not fair on the workmen, day work is not fair on the employers. Perhaps conscientious, honest workmen would be inclined to resent such a statement as a slur upon their integrity. None the less, the fact remains that considerably less work is done under a day-work arrangement than under piece-work, and less than might be done. Nobody is being blamed for it. It is merely a statement of the plain, hard fact.

Quite apart from deliberate "milk," human nature needs a stimulus to continued exertion. Conscience alone is not competent to the task. No sane man exerts himself when there is nothing to gain by it, and he exerts himself only to the extent that circumstances seem to require, and conscience, like everything else, apparently, wants a rest occasionally and takes it.

Many honest workmen regard it as an insult to an honest man to set a foreman over him "to keep him up to the mark," and they really believe that they would work just as well if there were no foremen or managers at all. But those who have worked in shops where discipline is very slack, and where there is not much incentive to work, have found, and admit, that the lack of discipline demoralises them and that they do not work so well as in shops that are run on smarter lines.

When an employer pays for a man's time he is entitled to as much work as can reasonably be done in that time. But that is the trouble. Who is to decide what is a reasonable amount or what the labour is worth? The mischief of it is that labour has no intrinsic value. It is worth only what it will produce—or worth, rather, the useful products it will produce.

For instance, a farmer may work diligently from morn till dewy eve, but if he sows seed to which the soil or the climate is not suited he may find that his labour is worth nothing. Or, if an engineer devoted his time to making petrol-motors of an obsolete type that nobody would buy, his labour would also be worthless. So the business head that directs labour into the right channels or applies it most profitably contributes very materially to its value.

THE VALUE OF MERE BRAINS.

It would be an exceedingly delicate task to apportion the respective values of these two factors, and most labour disputes arise through a divergence of view on that point.

Labour is in the nature of a raw material and should be sold and bought on the open market like other raw material without artificial restraint or manipulation, the price being ruled by the law of supply and demand, without artificial manipulation—except, perhaps, at a time of national crisis like the present when the prices of other necessities are fixed by legislation. For this reason labour combination of the price-forcing type is to be strongly deprecated.

A corner in labour is no more justifiable at any time than a corner in any other marketable commodity. Any coal owners who tried to make a corner in coal at the present time would be promptly lynched.—[They have not been.—Ed.]—yet it seems almost as if the self-styled working men can form a corner in labour with impunity. It might be argued that a workman has got to sell his labour or starve, but the same applies to the coal owner. He has got to sell his coal at the price he can get, or starve. If he made the price prohibitive people simply would not,

or could not, buy, and he would be ruined by his own stupidity or cupidity.

That, again, cuts both ways. If the workmen forced up the price of labour until it became prohibitive the employers simply could not carry on and the workmen would succeed in ruining themselves because employers are necessary to the existence of employees.

TRADE UNIONISM.

Moreover, the avowed object of Trade Unionism, namely, raising the standard of living, cannot be attained by a labour "ring." Even if it is demonstrable that the standard of living has risen since Trade Unionism was developed that does not say that it is Trade Unionism that has done it. The cheapening of the cost of production has had more to do with it than increasing the cost of production. For instance, when boots could not be obtained for less than two or three pounds, poor people could not afford to wear boots, but when boots can be obtained for eight shillings they can be worn by sections of the community that were previously barefooted. Or when watches cost two or three guineas they were not as common as now at five shillings.

Thus, lessening the cost of production puts within reach things which were previously inaccessible. But forcing up the price of labour cannot do it. Supposing, for instance, that mechanics go on strike and force up the price of their labour. Then the bakers demand and get an increase. Then the tailors force up their labour. Then bricklayers strike for more wages, then gasworkers and then miners, and so on. What is the result? Though the mechanics get an increase of wages, yet long before they can recoup themselves for what they lost during the strike these other people have also increased the cost of their productions, and though they do get more they have to pay more for their food and clothing, more rent, more for lighting, and more for fuel, the final result being merely to cheapen money, while the relative position is unaltered.

THE WRONG UNIT.

The buyer of labour is entitled to any increment in value due to its incorporation in marketable goods. But the mistake has been in measuring work in the wrong units. Time is not a proper measure.

For instance, two farmers A and B get up early on market day and go to market, and spend a hard day buying stock, implements, and other farm requisites. But A gives his mind diligently to what he is about, not letting himself be distracted or diverted from the matter in hand, and he exercises all his judgment in selecting his purchases carefully and wisely. B, on the other hand, goes about it less carefully, spends much time gossiping that might have been more profitably spent in studying the market and comparing the points of the different wares, and he buys more or less at random.

At the end of the day each has done a day's work, an equal quantity perhaps, but not an equal *value* of work, as the future will show in the greater prosperity of A. They earn money in proportion to the quantity and quality of their work.

And from this point of view day work is no more fair on the conscientious workman than it is on the employers. The diligent, good worker gets paid no more than the slacker who "soldiers," and there is neither incentive to, nor recognition of, best efforts. A man who sells raw material receives payment in proportion to the quantity and quality of the stuff he sells, and a man who buys labour should pay for it, and the one who sells it should receive payment in proportion to its quantity and quality.

(To be continued).

PRESENTATION AEROPLANES.

The Colonial Secretary announces that the sum of £6,000 has been collected in Newfoundland and remitted to the War Office through the Overseas Club for the purchase of aeroplanes for the Imperial Aircraft Flotilla.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

AN OBJECTIVE AND AN ALTERNATIVE.

Truly, the whole system is admirably effective. But the whole of it is external, and therefore vulnerable. This—as Ulysses Grant remarked to nobody in particular—is war, gentlemen: with no “by your leaves” from senseless bullets that somehow always get the most undesirable spots in aeromotor anatomy, and would as soon as not put an entire bandeau of tubing out of business, just for frightfulness’ sake. Might I then, please, suggest the alternative possibility of substituting internal borings in the upper part of an entirely higher-moulded crank-chamber? One so much higher moulded, in fact, as to compel the cylinder-flanges to be formed at least two inches higher on the cylinder body-length!

SOME PRACTICAL REASONS WHY.

The immediate incidental advantage of this high cylinder embracement—as many people have known for certain years—would be the lessened tendency to vibration. You do not brace up a sapling at the root, but as far up the trunk as you can. But, apart from this result, such internal oil-leads would be better protected from any kind of damage than the finest and neatest array of copper tubing, and at about one-tenth of the shop cost. They would not leak at the joints, either, in any circum-

stances, for they would have no joints to leak, as their entries from whatever lubricator-device was used could readily be made leak-proof. They would agree well enough with this particular lubricator, too. Or any other. Furthermore, their use would not affect the cylinder design at all, and certainly would not restrict it to the single-mounting method. Regarding all these points, an Italian designer certainly, a Frenchman probably, an Englishman possibly, would consequently have embodied such a system of oil-leads. On the other hand, such an alternative—cheap and permanent as well as effective—would never have occurred to the Teutonic copyist mentality, that merely refines mechanically, laboriously, upon the incomplete scheme; and generally, by sheer uninspired toil, unrelieved by the least flash of originality, just succeeds in making it work perhaps a little better by methods of more or less cumbrous addition, where the Latin instinct would have striven to subtract yet achieve the same result at worst; at best, a far better one.

AS TO THE IGNITION.

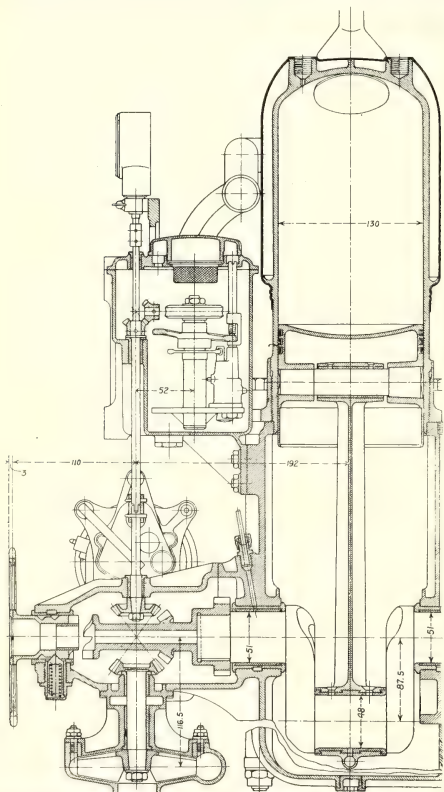
However, the faithful Teuton—whose tedious predestined virtues I am nevertheless unable to admire, while admitting them—at least makes sure of essential results somehow. His motor shall not be stalled for misfiring if he can help it. So in this case—instead of fitting a double wiring and plug to each distributor point of a single magneto, which is quite practicable, and using the opposite spindle for an electrical starting device, likewise a practical proposition enough—he has fitted two independent magnetos to make sure: both being duly water and dust proofed, the aerial highways being as yet untarred. Oddly enough, the Beardmore people, trusting a good thing to make good, in the sensible British manner, have gone so far as to adopt this notion of an electrical starting device. Yet pilots’ insurance premiums remain unaffected: and one has heard of no consequent instance of ignition failure. However, your Teuton revels in superfluities, even when they push his helmet off. We don’t; and that’s one more difference between us. So much, then, for the mechanical detail of the Beardmore aeromotors.

LEAVE WELL ALONE.

More fortunate than many of their road-faring fore-runners—or walkers, as the luck would have it—pilots may take it for granted that any sort of aeromotor is arduously, lengthily tested by craftsmen with a conscience before they let it go. It is only wasting good time then to make any such protestation about the Beardmore. Only the plain moral, with the Beardmore or any other, is: Finding things well, for goodness’ sake let well alone as long as they consent to stay so. Don’t fiddle and “adjust.” One of the finest pioneer-pilots we ever had died a victim to nothing but his passion for taking the clock to pieces and putting it together again—just not as it originally was. Still, leaving things well is always a matter of keeping them so. Several motorists I know have ten-year-old cars whose bearings they have never seen, merely because they used the lubricant the makers recommended, neither too much nor too little, but just enough. Doing this religiously, there is no reason to expect any worse result from a Beardmore motor, which—albeit in the purple—began life on the road, as I have already said.

THE FAIR CHANCE.

Now, although your thoroughbred will stand harder, rougher work, rougher sleeping, and scantier fare than any draught mule, unless he is carefully groomed and fettled, he will sicken sooner. Thus, the Beardmore, though needing no more upkeep than any other, and a



Sectional View of Rear End of the Beardmore 120 h.p. Aeromotor, Showing Driving-Gear and Detail of Mechanical Lubricator, etc.

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good deal less than some, must have that upkeep of the best. Yet there is nothing in that "best" that you, or even one of lesser intelligence cannot readily learn; so long as you don't strain that intelligence, but are content to do all you can remember of what you are told, and don't try to improve too much on the rubric. You had best learn, perhaps, by watching one of these motors come out of its bandbox, which is very particularly built and set out with special printed directions to tell you how to open it without hurting the contents. Do this—or see it done—then, as if you were going to blow a rare egg. And, beforehand, give the motor its birthright of proper surroundings, and thus a chance to make good. See that the aeroplane—or the motor bed thereof—has been properly fitted and made ready (no, my dear young friend, this is *not* always the case in a Government outfit, as the survivors will tell you at Wormwood Scrubs), and that the proper clearance spaces exist aft for the installation of any necessary starting gear or control fittings. See particularly that the material of the said bed is of the right kind—here is where your pressed steel chassis scores and keeps on scoring—so that it is weather and air proof. So strong, too, as to stand rigid against 50 per cent. more strain, than any expected working load, and then some. And lastly, having its upper surface made dead flat, so that at most a shim or two is needed beneath the crank-chamber horn-plates to line the motor up absolutely true.

BEDDING DOWN THE MOTOR.

Incidentally—as poor John Spyker found out years ago—here one sees the advantage of tubular attachments that can be set through discs a little eccentrically, which discs are screwed into drums in the chassis members, so that a final turn right or left, when the discs are set home, automatically brings the motor true. The shim-packings, however, are quite good enough in this case; but when you screw up the supporting bolts, tighten them alternately on either side, not to strain the crank-chamber anywhere; and subsequently, when the motor has been run for a while to make the whole machine find itself, go over these bolts again to see if any further setting home is needed. You may be sure it is, if you have noticed that the motor seems at all inclined to jump or jerk unduly, like a badly bitted horse. For this preliminary lunging—not gallop, remember—some sort of propeller would be the expected attachment. Just as people will risk ruining a fine colt and making it sulky by harnessing it to any old trap. Rather, I say, go to the extra expense of fitting one of the special Beardmore flywheels—only special because of its exact weight—on the nave or back end of the shaft, instead of a propeller, even if it is never used again until needed for the next motor.

(To be continued.)

ANOTHER AVRO TABLOID.

The following appeared in the Births Columns on August 25th:—

ROE.—On August 25th, 1915, at 57, Rusholme Road, Putney, S.W., the wife of Mr. A. V. Roe, of a son. Sincere congratulations on the son and heir.

ASTERISKS FROM THE "STAR."

A Grimsby skipper has been fined for not reporting Zeppelins. Newspapers have been fined for reporting them. No pleasing some people!

Gilbert, the French airman, who has escaped from Switzerland, is evidently "Gilbert the filibert." He was too hard a nut for the Swiss.

A SKYSCOPE STUDY.

Those who would like to see a first-class specimen of filming flights in France, or filming France in flight, with a real aeroplane chase thrown in, may do so this

week at the West End Cinema in Coventry Street, W. Some really excellent pictures, taken and exhibited by permission of the French military authorities, show sundry short-horn Maurice Farman and a Morane parol in the air. Later the cinematograph operator ascends in a military biplane to a height of seven or eight thousand feet, and his views of the earth as seen through the clouds are most realistic.

A perfectly authentic German biplane is seen in the distance (possibly by arrangement, but none the less veraciously), and after a long chase and much skilful manoeuvring, in which several machines take part, it is brought to earth—conveniently enough—in a corner of the aerodrome, thus epitomising, in photographic fashion, the first dream of almost every pupil at every aerodrome.—D. W. T.

THE BEATTY ENGINE.

One of the Beatty-Wright biplanes at Hendon on Saturday was flying with a new Beatty engine, and appeared to be giving highly satisfactory results. Although originally designed for 40-h.p. it actually gives 48.4-h.p. in the air. It has a nice steady, smooth note, and there is a remarkable absence of vibration.

As the engine only weighs 207 lbs. for its 48-h.p.—and a bit—it may be seen that it compares very well with the best stationary cylinder engines of the day, including the German ones, and if the authorities are wise they will consider whether it is not well worth while to encourage Mr. Beatty to set about producing engines on similar lines and of much greater size.

Mr. Beatty, who has worked hard on this engine for nearly a year, is to be congratulated on his success, though he rightly gives no small share of the praise to Mr. Wm. Barnes, his chief mechanic, and Mr. Claxton, his capable draughtsman. Other Beatty engines will soon be ready.

PAINTS AND VARNISHES.

If the coat does not make the man, it obviously does not make the aeroplane. One need not, however, emphasise the importance of covering metal, woodwork, and fabric with a proper coating of paint and varnish to protect it against the effects of air and water.

One of the oldest firms in this country manufacturing paint is that of Messrs. Thomas Parsons and Sons, of 315, Oxford Street, W. Established more than a century ago, they became famous for their treatment of coaches and other vehicles, and as time went on the business expanded into a great industrial concern which provides materials not only for vehicles of all types, but for practically every trade in which paint, enamel, or varnish is used.

For war purposes Messrs. Parsons are turning out large quantities of goods. These include coverings of every kind suitable for aircraft. Dope-resisting varnish; varnish for propellers, struts, engine parts, and floats; enamel for planes, engines, floats, and metal parts, and enamel which requires no stoving and is petrol-resisting; rust-proof paint and paint for hangars—in fact, anything the builder of aircraft wants is supplied by this firm, and in good quality, for which the reputation of over a century stands as a guarantee.

In their handsome showrooms in Oxford Street there is at present a beautifully made model of a Caudron, by Mr. Marcel Desoutter, which has been doped and painted with Parsons' products.—D. W. T.

A NEAT INSTRUMENT BOARD.

Reference was made in this journal a few weeks ago to the developments of the aviation department of S. Smith & Sons, Ltd., of Speedometer House, Great Portland Street, W. They have now produced a new type of instrument board which, by reason of its lightness and compact shape, will most probably have a large sale.

At the top is a neat 8-day clock. On the left is an altimeter, under it a revolution counter, and on the right an air-speed indicator. The outside measurements of the

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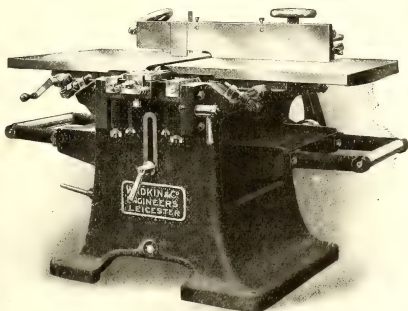
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case are only 13 inches by 8, so that the pilot has his most important instruments conveniently arranged and occupying a very small space indeed.

Large quantities of signalling lamp outfits are being manufactured by Messrs. Smith. Each outfit is complete in itself, with batteries, spare lamps, and sundry fittings, very neatly arranged and packed in serviceable cases, those for the R.N.A.S. being unusually well finished off.

There are many types of barographs, compasses, and other instruments for aircraft designed and manufactured by this firm, and a walk through the showrooms is interesting and instructive to all concerned with the aviation industry.—D. W. T.

AIRCRAFT WORKERS AT PLAY.

On Saturday afternoon last the employees of Martin-syde, Ltd., held a species of half-time banquet at Byfleet.

The proceedings opened with a cricket match on the Byfleet Cricket Ground, teams being drawn from the Woking fitters and the Byfleet erectors. In view of the small amount of time available for practice, the play was very good, considerable individual talent being exhibited on both sides. Byfleet batted first and won by a sufficiency of runs and wickets to make them happy.

A number of convalescent New Zealand soldiers were invited to the match, and they turned up in good spirits in all manner of strange vehicles, many of them being brought in a Martinsyde lorry fitted up with chairs; and, of course, owing to the heavy springing of the vehicle and the light load it carried, they had a very fair impression of what it feels like to be in an aeroplane in a really bumpy wind.

The match was followed by high tea and a smoking-concert in the village hall, where opportunity was afforded for a display of local talent. The best of feeling prevailed,

and showed the excellent terms on which masters and men co-operate for the country's good.

The arrangements throughout were excellent and reflect great credit on Mr. Campkin, who organised the outing.

THE WEEK AT HENDON.

Fine weather has enabled a good deal of valuable work to be accomplished lately, and the number of "tickets" taken at Hendon grows rapidly. One cannot help feeling, however, when watching the school work in progress, that the ground is quite as full as is consistent with safety, or even at times a little more so. Some limit will have to be put on the number of pupils or the number of machines allowed to be out at the same time.

No limit can apparently be put on the ambitions of some pupils. On Friday evening, at dusk, one budding aviator gave everybody present a painful scare for a short while. He had completed the first two portions of his brevet flying and was sent up for his final test. Evidently he thought his instructions to go up to 1,500 feet were not enough for his taste, and he climbed to 2,700 feet, making wider circles every time. Darkness came on, and the 45-h.p. Caudron from the Hall School on which he was mounted disappeared entirely. Many petrol flares were lighted, and when all hope had been abandoned he descended safely in a distant part of the aerodrome, just inside the fence, with practically no petrol left.

There was an excellent attendance of the public on Saturday afternoon, the day being pleasant for spectators and pilots alike. A large number of passengers were taken up. Mr. Beatty celebrated his birthday by making further flights on a Caudron, a machine with which he is now well acquainted, and which will in future be of considerable use in the work of his school. It is, by the way, interesting to hear that Mr. Virgilio is this week being added to his staff of instructors, where he will continue

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to show his command of the Caudron and the English language.

Other Beatty machines were brought out by Messrs. Roche-Kelly, Prodger, and Kenworthy.

Graham-White pilots in evidence were Messrs. Manton, Osipenko, and Winter on box-kites, and Mr. Russell on the five-seater.

Mr. J. L. Hall gave exhibitions on a Caudron, Mr. Smiles on one of the L. and P. machines, and Messrs. Baumann and Virgilio on Ruffy-Baumann biplanes.

Mr. Birchenough explored the upper regions several times on Maurice Farman, and other specially interesting events were the arrivals of a B.E.2c. and a Martinsyde scout from other aerodromes.

The Mann biplane was not out on Saturday, no pilot being then available. Mr. Sydney Pickles, who had handled the machine particularly well during the past few weeks, is now prevented by his contracts with other firms from flying anything of an experimental nature. Another pilot has been found, and, in all probability, further tests will be made in the course of a few days.

Soon after six o'clock it was observed that there were far more people on the ground than in the enclosures, and a little more risk seemed to attend the efforts of the many pupils than was really necessary. Landing is difficult enough when more than a dozen machines are making for the most favoured landing-spots without the presence of numerous groups of authorised and unauthorised spectators scattered over a large area.

On Sunday I am informed it rained at Hendon. How this information leaked out is not apparent, as I am also told that "not a soul was there."—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon	Fine	Fine	Fine	Fine	Fine	Fine	Wet
East Coast	Fine	Fine	Fine	Fine	Fine	Fine	Wet
South Coast	Fine	Fine	Fine	Fine	Fine	Fine	Very Wet
Midlands	Calm	Calm	Calm	Calm	Windy	Windy	Calm
Lake District	Wind	Wind	Wind	Fine	Fine	Wet	Fine

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger, R. Kenworthy and A. E. Mitchell.

Pupils with instructors on Beatty-Wright machines: Messrs. Arlon (15), Bond (60), Boyle (15), Fitzherbert (50), Greenhill (15), T. Jones (55), King (25), Litton (25), Morgan (25), Nash (3), Onley (15), Ross (70), Lampson (35), Smith (30), Theo (25), Thompson (10), Tolhurst (24), Willmet (12), Hoskier (15) and Claxton (10).

Pupils on Caudron machines: Messrs. Broadbent (15), Cadogan (60), Coates (30), Collett (30), Davison (50), Fawcett (20), Hoskins (25), L. F. Jones (40), Kirkwood (35), Middleton (25), Moxon (15), Nicholson (40), Overton (15), Stagg (25), Tremlett (15), Whincup (10), Campbell (55), Thomas (105), Summers (10), Mellings (25), Bowick (20), Begg (5), Collier (35), Grant-Suttie (40), Richard (30), Byrne (55), Cumming (20), Brown (30), Lashmar (35), Symington (30), Cowper (20) and Rimington (15).

Mr. Algernon Boyesen flew for his certificate, both flights and landings being exceptionally good.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Mr. G. K. Blandy continued extra practice. Exhibition flights were given on Thursday by Messrs. Beatty, Roche-Kelly and Kenworthy; on Saturday by Messrs. Beatty, Roche-Kelly, Prodger and Kenworthy; and on Sunday by Mr. Roche-Kelly.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Clarence Winchester and Ami Baumann.

Pupils with instructor on machine: Messrs. Phillips (50 mins.), Capt. Crawford (16), Liddell (8), Young (10), Belton (6), Bailey (8), Muspratt (5), Gallop (10), Griffith (29), Rees (20) and Prothero (20).

Pupils doing straights or rolling alone: Messrs. Phillips (130), Liddell (7), Young (30), Belton (20), Owens (20), Bailey (10),

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Muspratt (45), Gallop (8), Sherwood (40), Rees (7), Stewart (49) and Hughes (15).

Figures of eight or circuits alone: 2nd Lieut. Morris Godfrey Phillips had considerable practice on the 60 h.p. and 50 h.p. R.B. Caudrons and accomplished very fine "8's" and circuits.

2nd Lieut. M. G. Phillips passed in excellent style after only 9 days' tuition.

Machines in use: R.B. Caudron (60 h.p.), R.B. Caudron (50 h.p.), and Caudron-type (50 h.p.).

The 60-h.p. Gnome engine has been taken down this week and pupils have had great opportunities to develop themselves technically, instruction in this branch having been given by the various instructors.

Last week we unfortunately omitted to state that Mr. T. C. Wilson successfully secured his ticket.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Winter and Russell. Pupils with instructor on machine (straights): Prob. Flt. Sub-Lieuts. Biscoe, Clifford, Corry, Cross, Davies, Gammon, Hadow, James, Man, Minifie, Sadler and Till.

Straights alone: Prob. Flt. Sub-Lieuts. Minifie, Till, Roach-Pierson and Hodges.

Figures of eight or circuits alone: Prob. Flt. Sub-Lieuts. Beare, Hume, Hodges and Smethurst.

Figures of eight or circuits with instructor: Prob. Flt. Sub-Lieuts. Clifford, Ford, Penley and Roach-Pierson.

Certificates were taken during the week by Prob. Flt. Sub-Lieuts. Beare, Hume, Hodges and Smethurst.

Machines in use: Two Grahame-White pusher biplanes (50 Gnome engines).

Twelve certificates have been taken during the month of August.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, J. H. James, G. Irwing and C. M. Jacques.

Pupils doing straights: Messrs. Renton, Franklin, Grimwade, Jamieson, Woolley, Rogers, Horden and Rochford.

Messrs. May and Willcox circuits. Messrs. Ross, Roe and Moynihan figures of eights and circuits.

Messrs. Roe, Ross and Willcox all took their "brevets" this week, making good steady flights.

Machines in use: Three tractor biplanes.

AT THE HALL SCHOOL.

(Report arrived too late for insertion).

BIRMINGHAM.

AT THE MIDLAND FLYING SCHOOL.

Week ending Sunday, August 22nd. Delayed in transmission. Instructor for the week: Mr. S. Summerfield.

Pupils with instructor: Messrs. C. Kayfong, J. Tzesing, C. Mento, C. Chong, W. Watson and K. Jopking.

Pupils doing straights or rolling alone: Y. Liu, S. K. Lee, J. Munhon, L. Monfea; 3 trips each; time 15 mins.

School work was greatly delayed last week owing to one of the pupils having a slight accident.

Week ending Sunday, August 29th.

Instructor for the week: Mr. S. Summerfield.

Pupils with instructor on machine: Messrs. Morley, C. Kayfong and K. Jopking.

Pupils doing straights or rolling alone: Messrs. L. Monfea, J. Tzesing, C. Chang, J. Munhon, C. Chong, W. Watson, K. Chan, Y. Liu, C. Kayfong and K. Jopking.

Machine in use: Blériot monoplane.

A new pupil, Mr. F. Morley, joined the school last week. Two M. Farmans flew over the aerodrome, causing quite a stir in the neighbourhood, as it is rather unusual for machines to pass over this direction.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

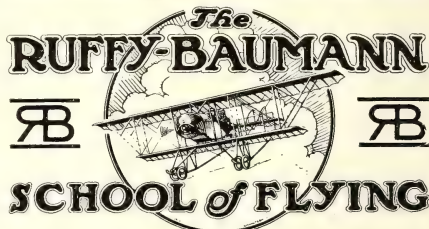
Pupils with instructor on machine: Messrs. Amphlett (30 mins.), Benson (40), Coats (21), Ingham (21), Inglis (14), Latch (15), Leigh (19), Lawton (12), Robertson (32), Robinson (13) and Shaw (52).

With instructor as passenger: Messrs. Barber (30), Lawton (10), Macintyre (15), Reid (24), Ridgway (26) and Robertson (18).

Eights or circuits alone: Messrs. Laidler (21) and Macaskie (44).

Machines in use: N.A.C. 50 Gnome pusher biplane, N.A.C. 80 Gnome monoplane.

Several passengers carried and test flights made.



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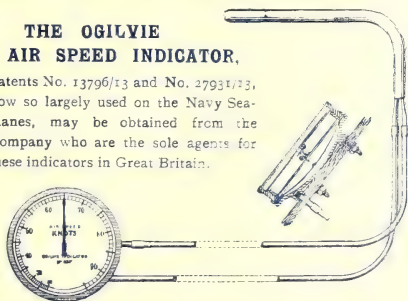
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THE AEROPLANE

WEDNESDAY, SEPTEMBER 8, 1915

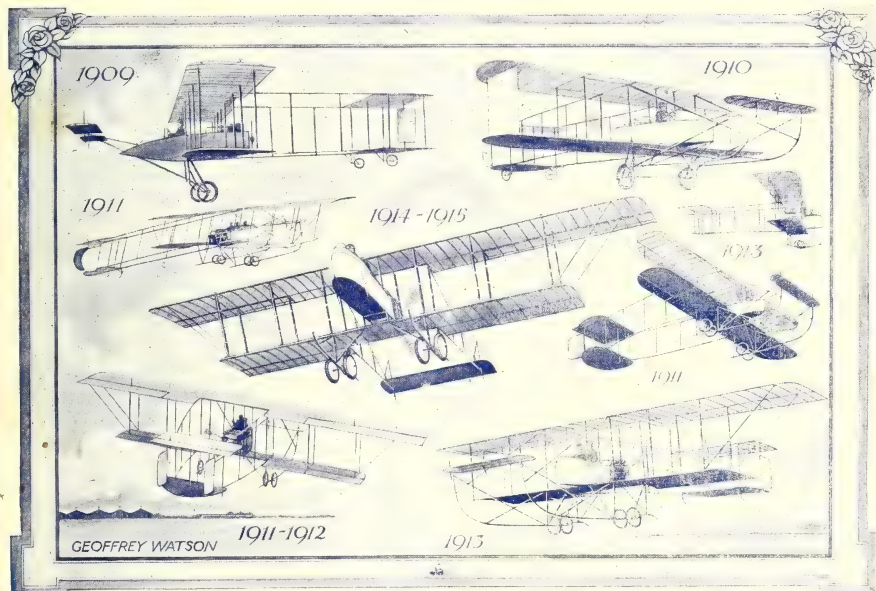
Edited by
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Vol. IX. No. 10

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ON AEROPLANE SUPPLY PROBLEMS.

It is not without interest, and, as usual, a certain amount of amusement, that one sees our old friend "Ornis," the *advocatus diaboli* of the Royal Aircraft Factory, and apparently the inspired mouthpiece of that establishment, abandoning his customary parts of excuser-in-chief and advertiser-in-general to the R.A.F., and blossoming forth as adviser to the British Empire on the subject of "Aeroplane Supply Problems" and "Multiplicity of Types" in the "Times Engineering Supplement." One particularly interesting feature of his article of August 27th is that it is possible for those who are not concerned with the welfare of the R.A.F. to agree with much that he says, though unfortunately some of his best points are spoiled by lack of plain engineering common sense or lack of military knowledge.

There is ever too much of the doctrinaire about "Ornis," and his arguments savour too much of the *parti pris*, for his articles to help much towards progress, and their tendency is rather to confine development of quantity and quality to what seems good to, or what is within the limited capability of, his friends at Farnborough, than to assist the War Office in obtaining the greatest possible number of the best possible aeroplanes, in the shortest possible time. Which thing has been from the beginning of things the steadfast policy of this paper.

The article of "Ornis" opens with the following significant phrase: "One of the most alluring of pitfalls—alluring it must be, for it could not otherwise be so popular—is that of giving unconsidered advice and expecting someone else to consider it." Which is very true, up to a point, but unconsidered advice may occasionally contain a flash of genius, whereas the only advice "Ornis" himself has offered hitherto has seemingly been carefully considered with a view to helping the policy of the R.A.F., which policy has been uniformly detrimental to everyone not interested in that establishment, and even in the article presently under discussion the cloven hoof appears at intervals.

OPPOSING POLICIES.

Under this heading, which follows the statement that "The cries are for an extraordinary increase of aeroplane production and for wholesale embarking on types of hitherto unachieved performance," he says:

"The policies of effort for quantity and effort for the 'latest thing' are opposed. The 'latest thing' must be slowly and cautiously made in ones or twos and tried in tens or twenties, first at home and then abroad. Large and quick production implies the complete acceptableness of the type; it implies launching out in special tools of great precision for rapid mechanical operations to diminish the drain on manual labour which is engaged elsewhere in the fight; it implies one identical product for repetition. Perspective is required, therefore, to deal with such proposals, and perspective is to be got by leaving the crowd which makes these noises

and looking on the situation from some detached eminence."

One would like to suggest merely that the roof of the new managerial offices at the R.A.F. is neither sufficiently detached nor sufficiently eminent to make the view therefrom thoroughly commanding. Hence my inclination to back against it the accuracy of the view obtained from the Royal Aero Club building—even though it includes a somewhat foreshortened vision of the birds up Bond Street.

It is true that "latest things" must be made in ones or twos, but they need not be made slowly and cautiously. They should, in fact, be made under pressure, and surely there is little need for caution in risking money or men on new ideas, considering how much of both are absolutely thrown away by this country on obsolete notions, or on aeroplanes which have been condemned over and over again as dangerous—as for example the wasted lives of Captain Chinnery, Captain Lawrence, Captain Fox, and Captain Mapplebeck.

If less attention had been paid to the unconsidered advice of so-called "experts" in Government employ, and a little more notice had been taken of the advice of mere rule-of-thumb engineers who have studied aeroplanes since they first were, a good many lives might have been saved—for the future harassment of the enemy.

THE LATEST THINGS.

But apart from that there are some "latest things" which are obviously sensible and worth trying at once, and others which are not. Also, some of the "latest things" for which the lay Press has been crying—to the annoyance of "Ornis" and his friends who cannot deliver the goods—are very old things to the rest of us. For example, the twin-engine "battle-plane" is as old experimentally as the Shorts of 1912, affectionately known to the older hands of the Naval Air Service as the "Double-Dirty" and the "Triple-Dud"—machines which were well worth developing if the Government had found the money, but a trifle expensive for a private firm. It is to the discredit of the R.A.F. that it did not follow the lead set by the Short Brothers.

As it was we had to wait for the "America" type Curtiss boats before we had any experience of multiple-engine machines, though Italy had the triple-engine Caproni out—it was illustrated in this paper—long before the German "battle-planes" appeared. Even British firms have started building multiple-engine machines—vide Mr. Tennant in Parliament—and still the R.A.F., despite its heavy subsidy for the production of brain-waves, has produced nothing.

THE OLD GAME.

Presumably the game is to let the private constructors do the "slow and cautious," and expensive, production in "ones or twos," and then for the R.A.F.

to produce a cribbed amalgamation of their designs and get the credit for the work and risk and expense of the other firms. It is a good old game, provided that nobody watches it and exposes it. If the R.A.F. wants credit for its work let it start out and produce something that other people have not produced. It has failed utterly to do so up to the present—except in so far as needless expense and trouble in detail design is concerned.

As a matter of fact, if the R.A.F. attempted to fulfil its functions as an experimental department it should be continually producing the "latest things" which are suggested by anyone intimately concerned with aircraft, instead of which it is continually lagging just behind all the independent firms. Even the inherently stable B.E.2c. was not original. It was merely a conglomeration of old ideas and pre-existent machines.

LARGE AND QUICK PRODUCTION.

When "Ornis" starts to talk quantities he is even quainter. The statement that "large and quick production implies the complete acceptableness of the type" ought to be true, but the fact is that "large and quick production" really means that the R.A.F. has persuaded the War Office that one of its pet designs will be acceptable if it fulfils its designers' claims. Generally it does not.

For example, the S.E.4 has been ordered in quantities, time and material have been wasted in making numerous and fearfully expensive parts, and the machine is a complete failure. The same thing is happening with the F.E.2c. The same thing happened with the B.E.8, at once one of the most inefficient and fatal machines ever made, even by the R.A.F. The same thing happened again with sundry R.E.s.

Any amount of "launching out in special tools of great precision" has been done, and tons of special steel and picked timber have been wasted, but the R.A.F.'s "latest thing" has, so far, always been a failure. Presumably it was thought that, as "effort for quantity and effort for the 'latest thing' are opposed," quantity would make up for lack of quality. The unfortunate thing from "Ornis'" point of view is that these things were not "made in ones or twos and tried in tens or twenties first at home and then abroad."

What happened was that in every case a sample one was made, and tried at Farnborough by some pilot who was afraid of losing his job if he said the machine was no good, or dangerous. It was put through more or less "doctored" speed and climbing trials—dives at the beginning of the speed course, and "intelligent anticipation" of its arrival at the end; and special propellers for the climb, and so forth. And then the War Office was persuaded to order these machines in quantities.

Even when it came to producing in quantities the designers showed their unfitness for their jobs, for any ordinary rule of thumb draughtsman could have produced machines of identical aerodynamic design which would be at least equally strong, and would cost just half as much in time and money to build, by the simple process of using ordinary material and sane detail work. So much for the people from whose detached eminence "Ornis" obtains his perspective.

MULTIPLICITY OF TYPES.

On the matter of different types of aeroplanes "Ornis" says:

"A multiplicity of types offers the advantage that, with the numerous points of view of different contractors there is a prospect that someone may reach the summit of performance, and that there is a possibility of utilising the various existing engines which

are so disparate in shape and performance as to require different aeroplanes to carry them. It may also be urged that as war calls for different kinds of achievements—scouting, reconnaissance, fighting, bomb-carrying, artillery direction—each in its way to be supreme of its kind, the different types should be kept distinct."

The use of the word "contractors" is to be noted, as it indicates the official inspiration, at least, of the article. Any non-official writer would have said "designer," or "manufacturer," or "constructor"; it is for the official mind alone to regard all aeroplane makers merely as contractors for Government orders, and the word is used invariably in official documents dealing with the aircraft industry.

It is to be noted also that the sentences quoted read rather as an excuse for what "Ornis" seems to regard as an exhibition of official weakness than as an explanation of a wise course to be pursued.

ON THE CONTRARY.

His arguments on the other side are singularly unconvincing, for he says:—

"On the other hand multiplicity of types is bad (1) Because all replacements and spares are not interchangeable but reduplicated, and with the present rapidity of change of pattern stocks are scrapped and work wasted when work is too valuable in time to be expended idly."

If that be so, then what possible excuse can there be for standardising B.E.s, S.E.s, F.E.s, and R.E.s. in vast quantities, when all of them are out of date before the contracts are given out, when none of them are anywhere near the "summit of performance," and when the majority of them are quite failures? The B.E.2c. is the only one of the R.A.F.'s products which can put up a good performance, and even it can be beaten on all its points by one or other of the "contractors'" own designs. Also, if work is so valuable, why are so many hundreds of men employed at the R.A.F. in producing so very little of anything of practical value? Standardisation of parts, as explained nearly two years ago in this paper, need not mean standardisation of general design.

"Ornis" continues:—" (2) Because the output of a given shop is enormously greater if it produces only one article continuously, and not several different articles." Right again, as, for instance, the big output of Avros, Martinsydes, Vickers gun-carriers, Bristol scouts, and Farmans, of Curtisses across the Atlantic, and in France of Caudrons, as compared with the output of the unfortunate firms making B.E.s, F.E.s, R.E.s, etc., who have to be continually changing patterns, jigs, and tools to keep pace with the mistakes and vagaries in design of the R.A.F. drawing-office.

" (3) Because raw material cannot be standardised and delays are introduced in the purchase and preparation of small quantities." On the contrary, raw material can be and is very largely standardised. Delays are only introduced when the R.A.F. insists on the use of some special material. These special materials are so frequently proprietary articles that one is curious to know the reason of the R.A.F.'s affection for them. And when a manufacturer is barred—as he frequently would be but for the common sense of the A.I.D.—from using something that does equally well, or even better, the delay and curiosity are intensified.

THE SCIENTIFIC MIND AGAIN.

Apropos the question of special material, it is worth while quoting an example of scientific stupidity. Some-

one in authority desired to have an experimental engine made on the lines of a captured German engine—a very sensible idea indeed if sensibly carried out. Unfortunately, instead of sending the pieces of the engine to the best-known steel manufacturers and saying simply: "We want steel which will do just what this does," the Government's stipendiary geniuses went and analysed the parts of the engine themselves and then demanded that steel should be made synthetically to their formula—which did not work. There may have been errors in the analysis, or there may not, for the error may have come in at the heat-treatment stage; but, anyhow, any first-class steelmaker could have produced the goods if he had been asked for performance and had not been tied to a formula.

"Ornis'" last argument against multiplicity of types is mildly amusing: "(4) Because the fliers themselves get far better performances from aeroplanes they know by heart, and the mechanics maintain them in better condition by reason of their familiarity with every detail." According to that argument, there ought to be one aeroplane, and one only. The statement as it stands is true, and there is far too much chopping and changing about of pilots and mechanics from one machine to another, but surely there are enough pilots and mechanics to allot a certain number to each of the approved types and keep them there, even if there are, as "Ornis" states, "40 different types emanating from 16 different designers."—He seems to be mighty well up in official information.

SUBDIVISION OF FUNCTIONS.

On this head "Ornis" remarks: "Some aeronautical engineers suggest that the various requirements of scouting, fighting, bombing, direction of gunfire, with wireless and other signals, and reconnaissance of the enemy should be co-ordinate in one class of 'versatile' aeroplane."

One would very much like to know what sort of "engineer" ever held such a crazy idea. It is as wholly foolish as if one tried to produce a locomotive which would do at once for express, goods, and local traffic. It is therefore possible to agree with him when he says: "Others prefer the specialised machine, and in support they rightly say that in war it is the supreme achievement which counts."

So sound are his views on this subject that it is worth while to quote them in full, for it is to be feared that few members of the aircraft industry, and fewer still of the officers and men of the Flying Services, read the "Times Engineering Supplement." In reading these opinions it is well to bear in mind that, though practically all "Ornis'" *desiderata* have been fulfilled by one or other of the machines built or being built by the "trade," none of the R.A.F.'s own products come anywhere near meeting any of the special requirements of any one class. Here, then, are the specifications:—

"For pure speed fighting, cut all unnecessary weight, omit the passenger, make the aeroplane stable, omit the bombs, the wireless, the camera, and, above all, omit the unnecessary call for very large fuel capacity and slow alighting. On these terms very high speeds and rapid climbs are possible, and with a machine-gun on so mobile a craft great execution is possible as well as easy escape.

"For the heavy attack with a broadside of fire, concentrate on the gun equipment and lose therefore some of the speed and climb, and—though it is a point open to debate—abandon the zeal for heavy armour, which at present-day heights of flight is wasted, and do not carry bomb fittings and signalling fittings.

"For bomb work, whatever the size of bomb, use a big aeroplane; if the bombs are large, use fewer of them; if the distance is large, have abundance of fuel and fewer bombs; but do not saddle the bomb-carrying aeroplane with a passenger and guns or camera or wireless. If it is urged that such an aeroplane needs defence from other craft, provide the defence, but provide it by means of other specialised fighters, and not by loading the bomb aeroplane with the equipment of a fighting aeroplane as well.

"For reconnaissance, photography, and artillery-fire direction, concentrate on these purposes, and according to the air endurance required supply the fuel; but for the protection of such aeroplanes provide fighting aeroplanes which can fly about them while they prosecute their proper job. This plan of defending an aeroplane instead of making it defend itself when it is engaged in some other duty than fighting is possibly objected to on grounds of experience; but if no experience of the proposed scheme exists it may possibly have points which have escaped notice, not the least of which is the merit of having each aeroplane excellent, with concentrated excellence for the job it sets out to do."

THE CRITIC'S STRAYINGS.

With the exception of his last paragraph, all this is quite sensible, even if some points are debatable. The flaw in the last argument is that it would need too many pilots and fighting machines to protect the reconnaissance machines. Therefore, reconnaissance should be carried out either by machines which are so fast as to be able to run away from enemy aircraft defending their own lines against scouts, or by big and slower fighting aeroplanes capable of battering their way through these defensive machines. This was the theory set forth a year or so before the war by General Henderson and Colonel Lykes, and there seems no reason to modify it in the light of later experience.

The fast fighting aeroplanes would, however, be very useful in defending artillery-control machines which have to work over a strictly limited area, which they cannot leave without throwing up their jobs if attacked by enemy fighting machines. Also, these single-seater, high-speed, gun-carriers would take the place of small scouts for special tactical reconnaissance, where one man may be sent to verify the situation at a special point; but if tank capacity is limited, they cannot supplant the small fast scout of the "tabloid" type for long-distance, strategic reconnaissance.

On the subject of the heavy gun-carriers "Ornis" is a little mixed. Sacrificing speed of climb almost necessarily means sacrificing height of climb, so that heavy armour—which is not yet fitted as a custom—cannot be lightly abandoned. But by sacrificing a good deal of horizontal speed it should be possible to retain climbing speed, height of climb, and the armour as well.

So far as the bomb-carriers are concerned, I am all in favour of big machines and plenty of them, and of protecting them in the French fashion by "*aeroplanes de chasse*," or small fast fighting machines. This is almost the equivalent of having a screen of destroyers and fast cruisers round a battle fleet, whereas the proposal to defend reconnaissance machines in a similar way is rather like advocating a destroyer screen round a fast cruiser squadron. There are times when such a thing is necessary, but it is not when the cruisers are scouting at top speed.

As this whole subject is so big, and as the further remarks of "Ornis" on "Increasing Output" seem to demand attention also, I propose to return to it in further detail next week.—C. G. G.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette" Supplement, September 1st.

WAR OFFICE, SEPTEMBER 1ST.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Sgt.-Majors to be Qmstrs., with hon. rank of Lieut.:—J. Mead, W. J. Waddington, J. E. Parkin (August 13th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on probation):—O. Lerwill (August 11th); C. Faber (August 12th); E. Seiby (August 15th); J. B. Fitzsimons (September 1st).

* * *

From the "London Gazette" Supplement, September 2nd.

WAR OFFICE, SEPTEMBER 2ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—CENTRAL FLYING SCHOOL.—The following appointment is made:—

Officer in Charge of Experimental Flight.—(Graded as a Squadron Commander).—Capt. G. B. Stopford, R.A., a Flight Commander, Military Wing (August 6th) (Substituted for notification in "Gazette" of August 10th).

* * *

From the "London Gazette" September 3rd.

ADMIRALTY, AUGUST 30TH.

ROYAL NAVAL AIR SERVICE.—The following probationary Flight Sub-Lieuts. have been confirmed in rank of Flight Sub-Lieut.:—G. F. Smylie (April 7th); H. O'Hagan (April 16th); G. H. M. Maynard, S. B. Joyce (May 2nd); D. J. Sheehan (May 7th); L. C. Keeble, F. J. Linnell (May 12th); L. E. R. Murray (May 24th).

The following probationary Flight Sub-Lieuts. for temp. service have been confirmed in rank of Flight Sub-Lieut. for temp. service:—S. D. Felkin (May 25th); W. B. Lawson (June 31st); E. M. Pizey (June 7th); C. H. M. Chapman (June 21st); C. A. Maitland-Heriot (June 22nd); F. H. Smith (July 12th).

SEPTEMBER 1ST.

ROYAL NAVAL AIR SERVICE.—Probationary Flight Sub-Lieut. John O. Davis has been confirmed in the rank of Flight Sub-Lieut. (April 17th, 1915).

WAR OFFICE, SEPTEMBER 3RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Flying Officers.—Capt. R. A. Bradley, N. Staff. R., and to be seconded; Sec. Lieut. C. d'A. E. W. Reeve, Suff. R., and to be seconded; Temp. Sec. Lieut. A. C. Hagon, R. War. R., and to be transferred to Gen. List; Sec. Lieut. J. N. Washington, Manch. R., and to be seconded; Sec. Lieut. I. H. D. Henderson, A. and S. Highlrs., and to be seconded; Sec. Lieut. V. S. Brown, Spec. Res. (August 21st).

CENTRAL FLYING SCHOOL.—Instructor.—Lieut. (temp. Capt.) The Hon. W. F. F. Sempill (Master of Sempill), Spec. Res., a Flt. Commander, Military Wing, vice Capt. G. B. Stopford, R.A. (August 6th).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on probation) confirmed in their rank: Francis W. Wright, James E. Marriott, Justin H. Herring, Colin Defries, Vernon S. Brown.

To be Sec. Lieuts. (on probation): William N. M. Dunkley, July 24th, 1915; Leslie A. McDougall, August 11th, 1915; Arthur T. Thompson, August 12th, 1915; Horatio H. Bright, August 26th, 1915; Thomas M. Scott, September 1st, 1915.

ROYAL GARRISON ARTILLERY.—Lieut. E. O. Grenfell, from Duke of Cornwall's L.I., to be Lieut., and to be seconded for duty with the Royal Flying Corps, August 17th, 1915.

From the "London Gazette" Supplement, September 6th.

WAR OFFICE, SEPTEMBER 6TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appointments are made:—

Squadron Commander.—Capt. (temp. Major) G. P. Wallace, Staff, South African Permanent Force, and to be temp. Major (July 31st).

Flight Commanders, and to be Temp. Capts.:—Lieut. (temp. Capt.) B. H. Turner, Staff, S. African Permanent Force, Lieut. (temp. Capt.) K. R. van der Spuy, Staff, S. African Permanent Force, Lieut. (temp. Capt.) G. S. Creed, Staff, S. African Permanent Force (July 31st).

Flying Officer.—Temp. Lieut. E. C. Emmett, Staff, S. African Perm. Force, and to be Temp. Lieut. (July 31st).

Asst. Equipment Officer.—Lieut. S. H. Hewett, Staff, S. African Permanent Force, and to be temp. Lieut. (July 31st).

NAVAL.

The following appointments were notified at the Admiralty on August 31st:—

ROYAL NAVAL AIR SERVICE.—Squadron Commander.—F. E. T. Hewlett, to the "President," additional (August 30th).

Probationary Flight Sub-Lieutenants.—L. E. R. Murray, F. H. M. Maynard, S. B. Joyce, D. J. Sheehan, H. O'Hagan, G. F. Smylie, F. J. Linnell, L. C. Keeble, all confirmed in the rank of Flight Sub-Lieutenants, with original seniority, and reappointed to the "President," additional, for R.N.A.S. (August 30th).

Temporary Flight Sub-Lieutenants.—E. M. Pizey, F. H. Smith, W. B. Lawson, S. D. Felkin, C. H. M. Chapman, and C. A. Maitland-Heriot, all confirmed in the rank of Flight Sub-Lieutenants, with original seniority, and reappointed to the "President," additional, for R.N.A.S.

Temporary Lieutenant (R.N.V.R.).—R. Griffin, transferred to R.N.A.S., as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of August 30th, and appointed to the "President," additional, for R.N.A.S. (temporary commission and appointed as Lieutenant, R.N.V.R., terminated).

Temporary Sub-Lieutenant (R.N.V.R.).—M. Bartlett, transferred to R.N.A.S., as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of August 30th, and appointed to the "President," additional, for R.N.A.S.

Temporary Captain (R.M.).—F. Summers, to the "President," for R.N.A.S. (September 4th).

Warrant Officer (2nd Grade).—C. R. A. Abbott and Mr. W. E. Tinson, both granted temporary commissions as Lieutenant (R.N.V.R.), with seniority of August 30th, and appointed to the "President," additional, for inspection duties with R.N.A.S.

Messrs. J. F. Jones and R. E. Greensmith, both entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of September 5th, and appointed to the "President," for R.N.A.S.

Mr. H. Foord, granted temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of August 30th, and appointed to the "President," additional, for duty with R.N.A.S.

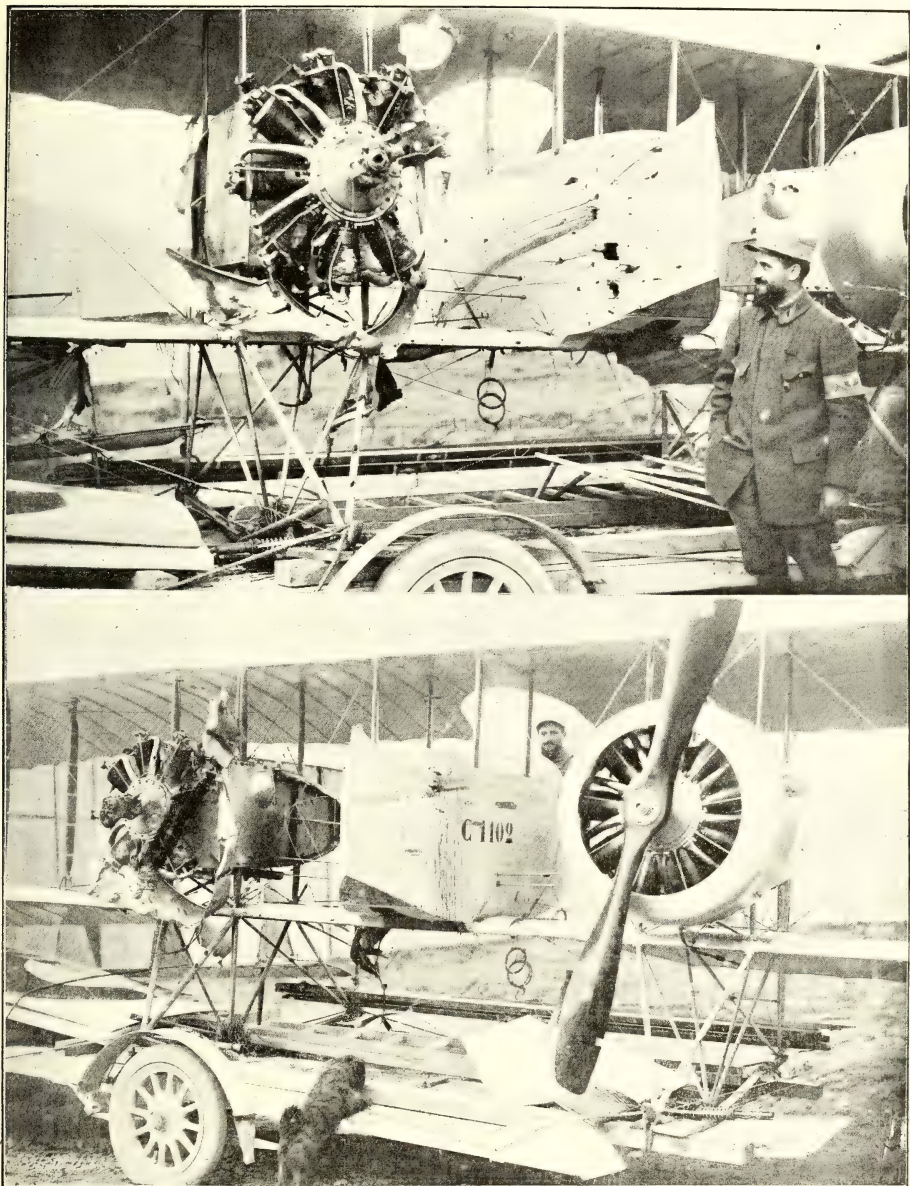
* * *

The following appointments were notified at the Admiralty on September 1st:—

ROYAL NAVAL AIR SERVICE.—Temporary Sub-Lieutenant (R.N.V.R.).—R. V. Harcourt, M.P., promoted to Temporary Lieut., with seniority of August 30th.

Mr. R. S. Collinson, granted temporary commission as Sub-Lieut. (R.N.V.R.), with seniority of August 26th, and appointed to the "President," additional.

HIT.



This exceptionally fine photograph, which is one of the most interesting of the war, illustrates most convincingly the benefit of having two engines. The circumstances of the case are described in the French Section of the Naval and Military Notes. It will be noted that the machine is the same Caudron which was illustrated last week. Apparently it was hit very soon after the previous photograph was taken. The bullet and splinter holes in the nacelle and in the chassis strut are worth noting. The long streak on the nacelle is apparently oil from the smashed engine. Apparently the machine landed safely and the wheels were only taken off to facilitate handling on the "remorque" or towing trailer.

The following appointments were notified at the Admiralty on September 2nd:—

ROYAL NAVAL AIR SERVICE.—Probationary Flight Sub-Lieuts.—J. O. Davis, confirmed as Flight Sub-Lieut., promoted to Acting Flight Lieut., with seniority of August 31st, and appointed to "President," additional, for R.N.A.S.

The undermentioned have been entered as Probationary Flight Sub-Lieuts., for temporary service, with seniority of September 4th, and appointed to "President," additional, for R.N.A.S.: W. E. Gardner, S. A. Black, and J. B. Howard, all lent to "Excellent," for short (G) course.

The following temporary commissions (R.N.V.R.) have been granted: F. E. Rowett, as Lieut., and A. M. Fitz-Randolph as Sub-Lieut., both with seniority of September 1st, and appointed to "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on September 3rd:—

ROYAL NAVAL AIR SERVICE.—Temporary Sub-Lieutenant (R.N.V.R.)—F. F. Chambers, promoted to temporary Lieutenant, with seniority of September 1st.

Captain.—I. T. Courtney (R.M.L.I.), granted temporary rank of Major while holding appointment of Squadron Commander in the R.N.A.S. (September 1st).

* * *

The following appointments were notified at the Admiralty on September 4th:—

ROYAL NAVAL AIR SERVICE.—Temporary Sub-Lieutenant (R.N.V.R.)—R. Graham, transferred to R.N.A.S. as Probationary Flight Sub-Lieutenant for temporary service, with seniority of September 3rd, and appointed to the "President," additional, for R.N.A.S.

Gunner J. Regan graded as warrant officer second grade, and appointed to "President," additional, for R.N.A.S., to date September 7th.

* * *

The following appointments were notified at the Admiralty on September 6th:—

ROYAL NAVAL AIR SERVICE.—Temporary Lieutenant (R.N.V.R.) B. Johnson promoted to temporary Lieutenant Commander (R.N.V.R.), with seniority of September 2nd.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows:—J. M. Alexander, July 24th; A. Fellows-Buck, September 4th; S. M. Kinkead, H. P. Watson, V. E. Sieveking, L. Edwards, and J. S. Bolas, all September 11th.

Mr. A. H. Kendall, granted temporary commission as Lieutenant (R.N.V.R.), with seniority of September 4th.

* * *

The Secretary of the Admiralty on September 3rd announced the following casualty:—

KILLED, AUGUST 10TH.

Collet, Captain Charles H., D.S.O., R.M.A. (Flight Commander, R.N.A.S.).

* * *

Charles Herbert Collet, D.S.O., R.M.A. (Flight Commander R.N.A.S.), was born on February 4th, 1888, at Calcutta and took his certificate, No. 666, on an Avro at the Central Flying School on October 21st, 1913. He was the hero of one of the finest aerial exploits of the war. On September 23rd certain Naval aeroplanes made a raid into Germany, and Lieut. Collet, as he then was, attacked the Zeppelin shed at Dusseldorf. His task was rendered difficult by the misty weather, but he dropped three bombs on the Zeppelin shed. His machine was struck by one projectile, but he returned safely. For this he received the Distinguished Service Order, and the Director of the Air Department of the Admiralty in a memorandum issued in October described the feat as notable—"gliding down from 6,000 feet, the last 1,500 feet in mist,

he finally came in sight of the airship shed, when at a height of 400 ft., and when only a quarter of a mile distant."

Captain Collet was regarded as one of the best naval aviators, having first attracted attention by his flying of the Navy's early Caudron, on one of which he looped the loop, being the first Naval aviator to perform this feat. Later he did much excellent flying on the big biplane bought by the Admiralty from the Deutsche Flugzeug Werke of Leipzig in 1913. Early in 1914 he had this machine equipped with a huge petrol tank in place of the passenger's seat and started from Plymouth on a non-stop flight to John O'Groats. He was brought down by engine trouble near Grimsby, but the flight stood as a British "record" for distance across country.

Early in the war, while on patrol in England, he was arrested as a German invader when he alighted on the race-course of an East Coast town, the D.F.W. biplane being taken as conclusive evidence. He described his sensations while guarded by excited Territorials as being about the most terrifying in his experience.

Personally he was immensely popular with officers and men wherever he served, his quiet, unassuming manner and his exceptional skill and bravery together winning the respect and affection of all. Many people in the R.N.A.S. and among civilians concerned with aviation will mourn his loss.

* * *

The Secretary of the Admiralty announced the following casualty on September 4th:—

Previously reported Missing, now reported a Prisoner of War in Germany.

Levy, Flight Lieut. John M. D'A., R.N.

* * *

The Secretary of the Admiralty announced the following casualty on September 6th:—

EXPEDITIONARY FORCE.

Injured.

(Under date September 3rd.)

Flight Sub-Lieut. Stanley A. Turpin, R.N.

* * *

The following appeared on September 3rd:—

The marriage between Flight Sub-Lieutenant Wesley-Oakey, R.N.A.S., and Dorothy Gwendolen, fifth daughter of Charles J. and Emily Palmer, of "Crownstone," Westcliff-on-Sea, will take place shortly very quietly.

* * *

It would seem that many of the young gentlemen who have been appointed Temporary Flight Sub-Lieutenants on probation have a good deal to learn before they can consider themselves "compleat airmen," and some of them seem curiously ignorant in small matters which are generally considered to be common knowledge among those who have had a fair general education, aviatric or otherwise.

An amusing instance of this occurred recently at a certain air station when a well-known Naval aviator turned to his Prob. Flt. Sub-Lieut. Orderly and told him to "get out the Short-horn." Five minutes later the youngster returned and presented the senior with a small size in megaphones!

An equally authentic case occurred at another air station when a Senior Officer of the R.N.A.S. paid a visit to see how things were going on and casually asked one of the young gentlemen how many degrees there were between N. and E. on a compass. The embryo Zeppelin Strafer was utterly unable to tell him!

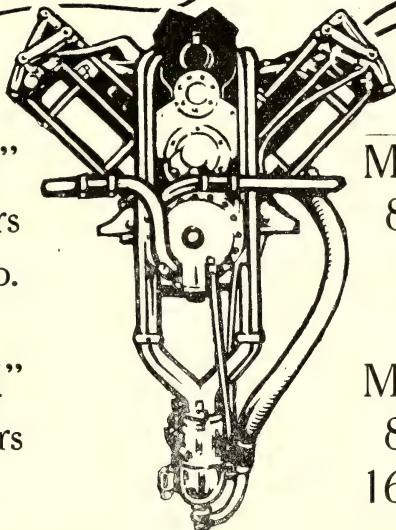
Another youngster who boasted a car was unhappy for days because he had to take the school machine off the ground on top gear, for the obvious reason that it was the only gear the aeroplane possessed!

These little things are unimportant, but if Probationary Flight Sub-Lieutenants only realised how little

Curtiss Motors

Model "S"
6 cylinders
60-75 h.p.

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8 cylinders
90 h.p.



Model "OXX"
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100 h.p.

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of all wide speed-range Aeroplanes, because
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ERNEST B. H. LANDER, 1915.

they really know about flying and the Service generally they would be all the more ready to learn, and would doubtless return the salutes of seasoned N.C.O.'s and Warrant Officers, who are old enough to be their fathers, with something more approaching respect than the usual feeble flick which seems to be the present mode, and they might also learn that they are not really superior to a number of educated gentlemen (with years of aeroplane work to their credit) who enlisted in the first flush of patriotism, and for some strange official reason still remain Air Mechanics, or Petty Officers. Pukka naval officers in the R.N.A.S. will do well to continue the policy of "quirk-strafting" until some of the new draft begin to shape decently.

From the "Times" agony column:—

TO OWNERS OF DEER FORESTS.—Anti-Aircraft man (Outer Defences, London), Bisley shot, own rifle, on leave Sept. 6th to 11th, would like two days' deerstalking.—R.N.A.S., A. A. C., care of Blair, King Street, Cheapside, E.C.
[Deerstalking with a pom-pom. Some sport! What?—Ed.]

The "Daily Telegraph" publishes a letter from a member of the Marconi Co.'s staff, now a Petty Officer Telegraphist in the Royal Navy. He says:—"When we arrived out here at the end of April we were to join his Majesty's ship 'Ark Royal'—the seaplane ship—for observation duty. Our hopes, however, were disappointed, as we were sent from one of the battleships ashore to this station on the Gallipoli Peninsula.

"Our airmen here are very active. One or two are always above us. The other evening there were five up together. We had a very exciting episode a few days ago. A German aeroplane was flying towards us, when one of our machines was seen approaching from the south. The Deutscher at once made off, but our man followed. The last we saw of them as they disappeared over the ridge was the German being rapidly overhauled. Unfortunately we did not see the finish. Our airmen have certainly established a big supremacy here."

MILITARY.

The following casualty in the Expeditionary Force was announced on September 13th:—

Previously officially reported Missing, now unofficially reported Killed.

Pike, Capt. J. M., Royal Flying Corps.

It is with very great regret that one records that Captain John Aidan Liddell, 3rd Argyll and Sutherland Highlanders and Royal Flying Corps, died in Flanders on August 31st of wounds he received while flying on July 31st, when he won the V.C. As a result of his injuries it was found necessary to amputate his right leg. The deed for which he was awarded the V.C. was officially described on August 23rd.

Captain Liddell, who was 27 years old, was the eldest son of Mr. and Mrs. John Liddell, of Sherfield Manor, Basingstoke. His funeral took place at Basingstoke on Saturday, September 4th, the body being brought from London, after a Requiem Mass at Farm Street. The service was conducted by Canon Scoles, rector of the Church of the Holy Ghost, Basingstoke, who was accompanied by the Bishop of Portsmouth, Canon Gunning (Winchester), and other clergy.

Surgeon-General Sir Thomas Gallwey represented the Aldershot Command, and four officers and two non-commissioned officers, a pipe major, and five pipers came from Edinburgh to represent the 3rd Argyll and Sutherland Highlanders. The coffin was borne to the grave by non-commissioned officers and men of the Royal Flying Corps, while the volleys were fired by men of the

R.F.A. The Master of Balliol and Sir Lionel Phillips were among those present.

[It is almost inconceivable that with adequate and proper surgery and nursing anyone could die a month after an injury to a limb from the effects of the injury or amputation, unless there were other injuries as well. The writer knows of two cases where men have lost their legs recently through sheer bad surgical work, one of them in a semi-official establishment and under the personal supervision of a Government doctor with a big reputation—and apparently little knowledge of modern surgery or pathology. In both these cases the leg should have been saved, and if such mistakes are made in well-equipped London hospitals it is not surprising that one would like to have more assurance of the efficiency of those abroad.—Ed.]

A gunner on active service writing to a friend in England says:—

"Thanks very much for cigarettes and copy of THE AEROPLANE. I always look forward to you sending the latter. Some fine reading in them, I think.

"The Germans seem very active about this part with their aeroplanes these last two or three days. I daresay I could give you some good accounts of air duels occasionally. I also saw a good thing occur with one of our anti-aircraft guns a matter of three weeks ago. One of our air-guns fitted on a motor lorry was concealed in a farmyard a matter of a thousand yards behind our first line waiting for the 'Allemands' to come over. They did excellent work until one day they were spotted by a German Taube, who promptly dropped lights to the German batteries, who at once sent over six 'coal-boxes' all the way round the ruined house, afterwards sending over bags of shrapnel with the intention of catching our fellows as they were running about to get away, but even so they stuck it until 12 midnight. This happened about 5.30 to 6 p.m. At 8 p.m. I went up there and they were still in the same place. At 12 p.m. they picked them up, only to return in a couple of days, but not in the same place, closer still if anything. This will show you what kind of stuff the anti-aircraft gunners are."

An interesting story which shows to what brutal extents German military logic can go when there is anything to be gained by it is told by an officer who has spent a considerable period in the trenches near Ypres. One day a German aeroplane came over the British lines at a considerable altitude, and as usual everyone began to blaze away at it. Finally a bullet hit the petrol tank and the machine caught fire, and for a few seconds it got out of control and practically turned over. Heavy objects fell out of the machine which were afterwards found to be the wireless apparatus and the machine-gun. Whether they were jettisoned or merely fell out is not clear, but the pilot soon took charge again and brought the machine down in a masterly manner. The machine came to earth near the British first line trenches a mass of flames, but as from its behaviour the pilot at any rate was still alive, a number of officers and men climbed up over their breastworks to try and rescue the crew, who were being burned to death. Of course, the Germans saw what was happening. They did not know whether their aviators were alive or not. What they did know was that they were out of action and therefore nonentities. Without a moment's hesitation a field gun opened fire and dropped shells all round the wreck. Six British soldiers were knocked out and the aviators had to be left to their fate. Doubtless the German brigade headquarters were satisfied. The six British soldiers had paid for the lost aeroplane, pilot and observer.

The same officer narrates how his regiment secured a strange trophy. By an uncommon piece of luck a camera

THE NEED OF THE NATION IS **More Aeroplanes**

THE NEED OF AEROPLANE MAKERS IS **More Buildings**

¶ We can design and erect Factory Buildings for Aeroplane makers in Steel Construction in the shortest possible time.

¶ And we get our factories finished to time, because we are under a penalty in all our contracts for every day's delay beyond schedule time.

¶ We have just prepared a special Aeroplane Shed design, including a new idea in doors. If it is of any use to you in designing your new extensions, just write us.

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PHONE : EIGHT LONGFIELD

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was shot clean out of a German observer's hand. It came tumbling to earth, and although badly battered it was possible to obtain several negatives from it, so presumably the camera contained films.

The Commissioner of Police is anxious to find a lady who saw a soldier—Private A. E. Jenkins, of the Royal Flying Corps—knocked down and fatally injured by a taxicab at Hyde Park Corner on Thursday night, September 2nd. The taxicab drove off after the accident.

FRANCE.

The communiqué of September 1st says:—

On the night of August 28th our aviators bombarded the German works at Ostend, the cantonments at Middelkerke, and the station at Thorout.

Enemy aviators dropped bombs on Lunéville, where victims are reported among the civilian population.

On September 3rd the Ministry of Marine issued the following official communiqué reviewing the operations of naval aeroplanes:—

Last week, despite a violent cannonade and the use of search lights, our naval aviators threw more than 300 4-inch shells on the German naval installations on the Belgian coast.

In Egypt, Syria, and Venice our waterplanes are also showing great activity. They have frequently driven away Austrian machines—following one as far as Pola.

The afternoon communiqué of Sept. 6th says:—

Our aircraft bombarded the barracks of Dieuze and Mörchingen.

The evening communiqué of Sept. 6th says:—

On September 1st, as we announced in the late communiqué of that date, four German aeroplanes bombarded Lunéville, an open town, where there was absolutely no military establishment to destroy. Our enemies had pushed their refinement so far as to aim distinctly at the populous quarters and to choose for their operations the day and the hour of the market. Thus the victims, unfortunately too numerous, were mostly women and children.

As a measure of reprisal 40 of our aeroplanes this morning bombarded the station, the factories, and the military establishments at Saarbrücken. The aviators were able to verify that the results achieved were considerable.

A German machine was obliged to land at Calais, and the aviators were taken prisoners.

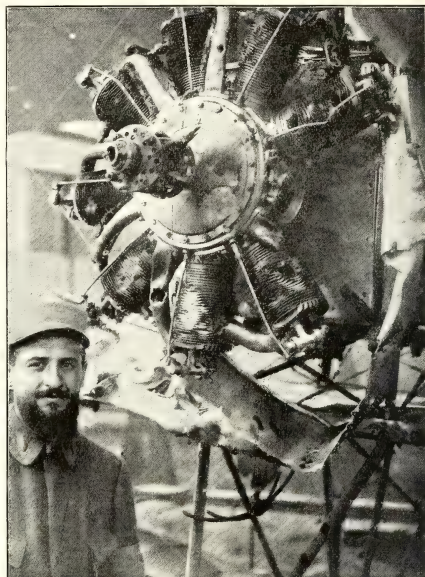
Enemy aeroplanes dropped bombs on Saint Dié without doing any damage or causing any loss of life or injury to persons.

It is reported officially that M. Pégoud was killed on August 31st, on active service in France. M. Pégoud, who was the second aviator to loop the loop and the first to jump from an aeroplane in a parachute, had done much work of high value since the outbreak of war.

The official account says:—

In the course of a brave fight yesterday morning (August 31st), over Petit Croix, Sous-Lieutenant Pégoud met with a glorious death. The aviator, who was alone in his aeroplane, made a daring attack on a German machine, upon which he fired, emptying several belts of ammunition from his machine-gun. He was himself hit by a bullet which killed him instantaneously. The machine fell to the ground within our lines.

It is reported from Paris that on August 27th four French aeroplanes flew over Mulheim (in Baden, at the edge of the Black Forest), dropping bombs on the railway station and the electric station between the station and



A close view of the shell-strafed le Rhône illustrated on p. 277.

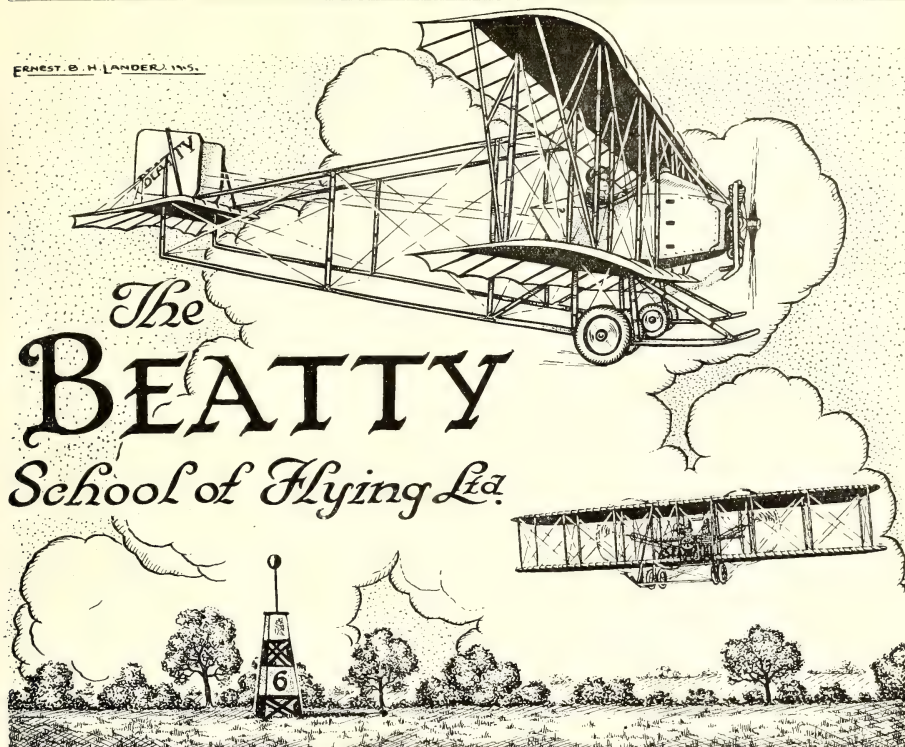
the town. The aviators also flew over Freiburg and threw bombs in the vicinity of Sarrebourg.

It is reported that, while flying near Le Bourget on September 1st, a military aviator named Michaux was caught in an air eddy above the clouds at a height of 700 metres. The machine fell to the earth a few miles from Le Bourget. The aviator was killed.

It was reported from Paris on September 3rd that Adjutant Bertin has been decorated with the Cross of the Legion of Honour for a feat of notable bravery on August 24th. Bertin, with Sergeant Boyer, on another aeroplane, flew behind the German lines, his mission being to explore four miles farther than Boyer. When 10,000 feet up Bertin was wounded in the thigh by a shell splinter. Boyer was compelled to land and his machine capsized, and he had to burn it, but he was rescued by Bertin on the return journey of the latter, who, although his aeroplane was riddled with 98 shell splinters, descended and picked Boyer up and so returned to the French lines.

The fortunes of war are mysterious beyond the grasp of man. It will be remembered that an illustration appeared in last week's *AEROPLANE* showing a French twin-engined battle aeroplane. Since that photograph was taken this machine has been in a battle, and that performance of a very one-sided nature. During a reconnaissance a German anti-aircraft shell burst right in the face of one of the engines and splinters punctured the nacelle and the chassis members, and generally damaged the machine badly. The observer was severely injured and fire broke out in the damaged engine nacelle, in which, of course, the petrol tanks are also accommodated. Thanks, however, to the skill and coolness of the pilot and the sound construction of the Caudron a safe return was effected. The pilot is described as Sergeant-aviateur D—, and it is considered that he will get the Médaille Militaire for his performance.

ERNEST G. H. LANDER, 1915.



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Another French aviator's views on the war are somewhat amusing. He says: "Personally I consider it a match of twenty-four rounds. First round—against us; second to sixth with us; seventh to thirteenth beaten on points; fourteenth equal, and after will come very quickly the knock-out!"

He continues: "It is a long time since I was out together with O—for a reconnaissance. He did photos at 4,500, and I followed him just a little after, looking for a Boche who would not come, and my time passed in counting the little bubbles all round his 'bus. It is funny, I assure you, that kind of business, because in the end you get tired of the number and give it up as hopeless."

* * *

One gathers that Sergeant Charles Hubert, formerly of Hendon, is doing some very fine work in the French Aviation Militaire, and is particularly good at aerial photography. He is fit and well despite the fact that his machine has been hit at least thirty times by the debris from shrapnel.

* * *

The special correspondent of the "Petit Journal" in the North of France tells a story said to be told by an English hospital attendant about a British pilot who was struck blind at an altitude of 5,000 feet.

"We were three stretcher-bearers, and were in the trenches trying to count the puffs of grey and white made by the shells bursting over the enemy's trenches. Suddenly one of us pointed to a British monoplane reconnoitring above the German lines. It was swaying to and fro and zig-zagging like a drunken man. It began to descend within the lines, then suddenly rose again, and finally dropped 300 yards from the British trenches. The pilot had been blinded by shrapnel, the look-out was dead.

"Send for Major D.," the pilot cried, as they helped him from his seat. 'Before I was blinded I found out what I was sent to do.'"

[The story is a most improbable one and is very like a yarn told last autumn. If the pilot was blinded it is not clear how he managed to land.—Ed.]

* * *

It is reported that German aviators are amusing themselves by dropping ironical messages into the French lines. A leaflet dropped at Amiens says:—

"The Russians have succeeded in drawing us into traps at Warsaw, Kovno, Novo-Georgievsk, and Brest-Litovsk.

"Two million Russians have penetrated into Germany and Austria. Some of them are even cultivating French fields behind our lines.

"The progress of the Allies against the Turks is as great as the victory of the Italians over the Austrians.

"Esquimaux are besieging Spandan.

"On the famous mountain of Schratzmaennele to the south-east of Berlin the French have taken a trench.

"Ultimate victory is more certain than ever!"

[This Teutonic humour is unexpectedly rich, and reads quite like certain newspapers in this country.—Ed.]

* * *

A French journalist has written the following enthusiastic account of an incident he witnessed in France recently:—

"Towards four o'clock a French aeroplane, piloted by an aviator already famous for his marvellous skill and bravery, arrived from the hangars behind the firing line and made towards the German lines.

"It was but a matter of seconds before the 'Boches' opened a fierce fire on the machine. The Frenchman, flying very low, continued calmly on his way.

"His attitude may be described as 'heroic provocation.' Leaving our underground shelters and trenches

we raised ourselves just above the parapet to watch the movements of our aeroplane. We counted the missiles that were being aimed at him by the German batteries. We counted up to 354 missiles, and still our gallant aviator was above the enemy's lines, safe and sound as when he left the hangar. At last the German guns ceased firing, evidently seeing the uselessness of it. What a rage the German artillerymen must have been in! And the aviator—like a triumphant eagle—continued to fly about over the German lines, while our cheers rang out loud and long.

"One day this same pilot had the sangfroid to drop a number of pamphlets on to the artillery of the Germans. On these pamphlets was written in ink: 'You fire too short; you fire too long; you cannot touch me before I am gone!'"

GERMANY.

The communiqué of September 1st says:—

North-west of Bapaume an English aeroplane was shot down by one of our aviators.

* * *

The communiqué of September 2nd says:—

A French aeroplane flying over Avocourt (north-west of Verdun) was shot down by one of our battle aviators. The machine was set on fire.

* * *

The communiqué of September 6th says:—

Nothing of importance has happened in the Western theatre of war. An enemy biplane was shot down on the Menin-Ypres road.

* * *

It is reported from Denmark that the German military authorities are building at Toender, in North Schleswig, an enormous shed for Zeppelins, surrounded by anti-aircraft guns.

[Zeppelin strafers, please note.—Ed.]

* * *

A letter written by a German aviator which has reached this country through devious channels indicates the academic interest taken by the Germans in all that pertains to war even if it be the work of the enemy. This letter says:—

"French aviators now invariably fly in squadrons of considerable strength, both for reconnoitring purposes and for attacking our aviators in order to prevent them from getting over the French lines. As they possess a huge number of machines and block our way systematically, we have had to follow their example.

"This is how the French air squadrons operate: When they wish to prevent us carrying out a reconnaissance, a dozen aeroplanes ascend to a height of 6,000 ft. and patrol our line; an equal number rise to 9,000 ft. and fly along our front, taking an opposite direction.

"Should one of our machines attempt to pass through the meshes of this net, the two French ones who happen to be nearest attack it simultaneously, one from above the other from below. If that is not sufficient two others fly to their assistance.

"The French aviators adopt similar methods when they bombard our aviation centres, railway stations, etc. They are organised as follows:—

"Each squadron consists of an avion which leads the way, a few others to see that the right direction is maintained, and the bomb-carrying machines. They manoeuvre very skilfully, like a fleet at sea."

* * *

An interview with a German engineer aviator published in Copenhagen on September 6th gives an account of experiments in Germany with new giant aeroplanes, which the Germans hope will supersede Zeppelins.

The idea of constructing them is said to have arisen from the examination of a large Russian machine shot down in East Prussia some time ago, and now at the aeroplane factory at Gotha.

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The actual construction of the new machines is stated to be done by a Stuttgart firm, and it is said that the "greatest aeroplane experts in Germany" in conjunction with prominent aviators are superintending the work. The first aeroplane of the new type is ready and is now at Friedrichshafen, but it has not yet been sufficiently tested. A second machine will soon be ready and will be sent to Hamburg for trials.

The machines are said to be biplanes measuring 42½ metres (about 140 ft.) across the wings, and they will have 300 h.p. motors, with three propellers each. They will be capable of carrying sufficient petrol for eight hours, they will have wireless and searchlight apparatus, they will carry bombs of 10 kilogrammes, and they will be able to go to London and back in five hours.

[All of which would be very terrifying if we did not know something about big aeroplanes in this country. Still, after making due allowance for the desire to bluff a neutral country, one may deduce the fact that Germany is seriously engaged on turning out 300 h.p. aeroplanes on gigantesque lines. If the Royal Aircraft Factory had done its duty we should have had machines of this kind in the air nearly two years ago.—Ed.]

The special correspondent of the *Daily News* at Copenhagen gives another account of the new German multi-engined biplanes which is distinctly amusing. He says:

The new aircraft is not a German invention, but is a copy of a Russian machine which was brought down while reconnoitring over East Prussia. This Russian model so convinced the German experts of its merits that they immediately began to make a reproduction at the factories in Gotha.

The new machines are fitted with three 100-horse-power motors, with three propellers each. They carry fuel for eight hours, wireless, searchlights, five machine-guns, 120 bombs, and a crew of eight.

[It would hardly be necessary for the Germans to wait till they captured one of the Sikorsky biplanes before proceeding to "copy" it, and, at any rate, the highly efficient triple-engined German machines are very different from the crude Russian multi-engined box-kites. Still, the load described is a bit hard on a 300 h.p. machine—and why on earth should a war aeroplane want to carry eight men? An aeroplane with nine propellers would look a very curious kind of windmill. The five machine-guns plus the 120 bombs plus the eight hours' fuel plus the searchlights plus the crew would tire a self-respecting Zeppelin. Surely the correspondent has had his leg pulled.—Ed.]

RUSSIA.

In a report by Major-General Brjosovsky, commandant of the fortress of Oswiec, to the Emperor of Russia, accounting for the evacuation of the fortress, the General attributes the German success largely to the use of 600 balloons of asphyxiating gas which were sent into the defences and rendered them untenable.

The "Daily Chronicle's" special correspondent, Mr. H. Williams, reports from Petrograd on Sept. 6th that Germany's naval authorities seem to be preparing for another attack in the Gulf of Riga. Their seaplanes have been flying over the entrance to the gulf, obviously with a view to discovering the position of the Russian squadron, and as far as possible the lie of the Russian mine fields.

ITALY.

The communiqué of September 3rd says:—

One of our aviators dropped bombs with effect upon the cantonments of the enemy along the road to Kostanje Vica and Vojsica.

The communiqué of Sept. 6th says:—

Enemy aeroplanes have persistently attempted to make surprise raids over our territory, but wherever

they have appeared our anti-aircraft batteries and the rapid ascent of our pursuit-squadrons have compelled them to retreat precipitately.

The Austrians are using Riva, at their end of Lake Garda, as the starting base for raids on the important military works at Brescia and Verona, and probably other aircraft and armament centres. So that is why our Ally is worrying the town with waterplane visits so frequently and successfully.

A Swiss local paper, the "Constance News," says that a dirigible, which it calls a Zeppelin, on trial on 26th ult., was pointed at both ends and of a lead-green colour. It is reasonable to put more faith in the local people than one does in the other pressmen of that country.

The naval officer who did observe on the Austrian waterplane which bombarded and was afterwards captured near Bari, has arrived at the famous and ill-famed Island of Elba—the Portland of Italy. He will, presumably, be detained there till "the clouds roll by." Napoleon the Great might have said, "après moi le déluge"; for both observers and floods descend or drop from the skies. True, they are not all after him, since he is above all. On second thoughts, the above remark does not seem as explicit as I intended it should. However, it is said to be a good sign if one confesses to second thoughts; I suppose because few can stand thinking twice consecutively.

How much longer are flying men to be burnt alive by ignited petrol tanks? It seems a high price to pay for pressure feed. And what, please, is the proportion in fire casualties between mono- and bi-planes?

A well-known officer pilot, Lieut. Buongiovanni, not Capt. Luke the record man of early days, lost his life at Mirafiori on 29th ult., consequent on fire breaking out after a fall on a Blériot. Deceased was in the Engineers, recently recalled to the Aeronautical Corps, to which he was attached some time back.

The fire question was always peculiarly acute in Italy, possibly owing to the higher temperature and greater dryness of the atmosphere here, rendering everything more inflammable. Engines probably run warmer, too, especially in August, when, a proverb says, "the earth toasts."

The "Supreme Poet" of the Italy of to-day has again visited Trieste, piloted by Commander Miraglia, R.N. They had to come down to take in petrol at Grado on their way back. "The cat, frequently as she may visit a larder in safety, ultimately leaves her tail in the door." Let us hope not in this case.—T. S. HARVEY.

An Italian arrived from the Near East reports that operations against Smyrna have been greatly intensified, the French and British having received important reinforcements. The town, bombarded by aeroplanes, has suffered considerably.

TURKEY.

The communiqué of August 30th says:—

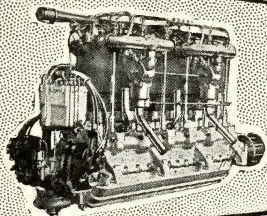
The enemy on Saturday renewed his stubborn attacks in the district of Anafarta. . . . Our aviators who took part in the battle successfully dropped bombs on the hostile positions.

BELGIUM.

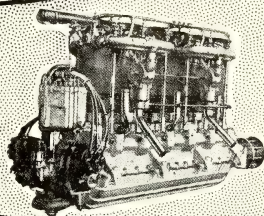
It is reported from Amsterdam that in the small hours of August 28th an aviator dropped bombs on an airship shed at Ghent, destroying it. Another account gives the date of the raid as August 26th, and states that the damaged buildings were aeroplane sheds.

A message from Amsterdam says that on August 27th

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a French aviator dropped several bombs on the barracks at Etterbeek. The damage done is unknown.

* * *

A correspondent of the "Petit Parisien" states that on August 21st he saw a train passing through Liège containing the "hull" of a Zeppelin and 30 damaged automobiles, while on the following day another train passed through carrying another Zeppelin, so broken to pieces as to be obviously quite useless for further service. [Presumably "hull" means one of the cars or gondolas, and the wreckage of the frame followed next day. Both may equally well have been parts of a Parseval.—Ed.]

* * *

It is reported that a raid took place on Brussels on August 27th calculated to annoy the Germans spiritually as well as corporeally. At 1 p.m. a French machine appeared over the city, the occupants of which waved a tricolour violently, and dropped a number of hand-bills recommending the natives to take heart because help might come.

After amusing themselves in this manner the aviators proceeded to Etterbeek and dropped six bombs on the Landsturm barracks there. Two more bombs were dropped on the gas factory, which wrecked it. It has been reported that a German professor of psychology has invented an instrument called a Hassapparatus, which is calculated to transmit radio-active hate-waves to the carburetors of enemy aeroplanes, choking the mixture thereby, and thus causing the machines to descend, but the Frenchmen got away safely, so presumably the apparatus was not handy.

U. S. A.

The following has been issued by the Aero Club of America to encourage the U.S. authorities:—

That Russia has committed the same mistake that Germany committed in the early part of the Belgian campaign, and that the Russian defeats are the result of lack of aeroplanes on the Russian side for reconnoitring, controlling artillery fire, and preventing the German air scouts from mapping the Russian possessions, is shown by reports which have reached the Governors of the Aero Club of America. These reports, which have been received from a score of reliable sources since the beginning of the war, show how the comparatively small German forces, but possessing a large number of aeroplanes and experienced aviators, have had such a tremendous advantage

over their foe that they have been able to advance through difficult country and take fortified places in spite of the overwhelming numbers of the Russian army.

In a summary prepared from reliable reports, by Mr. Henry Woodhouse, a Governor of the Club, and Managing Editor of "Flying," the official publication of the Aero Clubs of America, Illinois and Pennsylvania, and of the American Society of Aeronautic Engineers, the following facts are given:—

The success of the Germans, who, with 1,200,000 men, have succeeded in forcing the Russian army, which has more than twice as many men, to retreat, abandoning strongly fortified places, has been due entirely to:—

(1) Failure on the part of the Russian army chiefs to recognise the possibilities of employing aeroplanes to good advantage for reconnoitring, directing artillery fire, co-operating in the work of cavalry and infantry, and in protecting the Russian lines from the prying eyes of the efficient German air scouts, who, unchallenged, not only mapped but secured detailed photographic plans of the Russian positions and distribution of forces.

(2) Failure on the part of the Russian army chiefs to recognise the necessity of shifting of front and of making strategical moves to offset the advantage gained by the enemy through having more and superior aeroplanes and aviators.

(3) The small number of Russian aviators and their lack of experience, due to not having manœuvred with the troops before the war.

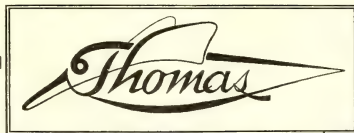
(4) Lack of aeroplanes to co-operate with Russian artillery in directing gun-fire.

(5) Lack of sufficient numbers of aeroplanes and equipment at the disposal of the Russian aviators which would have enabled them to operate with maximum efficiency.

At the beginning of the war there were about eight hundred aeroplanes in Russia and about one thousand in Germany. But Germany had about one thousand fully trained aviators, whereas Russia had only about four hundred, most of whom had only qualified as pilots and had not had any experience after that in military work. The aeroplanes available in Russia were of many types, with different kinds of motors and different controls, and men who had only operated one type of machine for a short time were not able to pilot other types. Many of the machines were light monoplanes, equipped with only 50-h.p. motors, and had to be discarded.



A View of and from the Fortress of Wierickeschans in Holland, where sundry British aviators are interned.



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A few large Sikorsky aeroplanes could not be used for a time because they required large fields for starting and landing. Aside from this, they are much slower than the German machines, and are easy targets for anti-aircraft guns. For these reasons, the ten Sikorsky biplanes that have been in commission during the past six months could not render maximum service.

Whereas German aviators have each had an average of four aeroplanes ready for their use, the Russians had to wait for their machines to be "tuned" up. The Russian aviators, lacking experience, went out only occasionally and saw little; the German aviators maintained a constant air patrol, and brought back detailed accounts and photographs of the Russian positions.

One of the reports received from Mr. J. B. Gilder, who got his information in letters from Germany, supplies an interesting bit of information, and gives an idea of the part played by aeroplanes in the general Austro-German advance which began last May. The needed reinforcements for the successful Austro-German frontal attack on the Russian fortified line between Tarnow and Gorlice were so cleverly divided and concealed that neither the Russian scouts nor aviators could obtain a clear picture of the extent or importance of the movements which were being carried out.

On the other hand, the fact that the Russian front had undergone only a slight change during the long period of trench warfare was of great advantage when it came to distributing and placing the German and Austrian artillery. Through the activity of the German information service, and particularly the aviators, the Russian lines were exactly known and mapped out. Hundreds of photographs were taken by the aviators, and topographically reproduced, which gave an almost unbroken and constantly up-to-date perspective of the Russian front from the mouth of the Dunajetz to the Dukla Pass in the Carpathians. This information was of inestimable importance when the final plans were ready for the grand assault on the Russian positions at the beginning of May.

The German aviators have been operating unopposed, while the Russian aviators have been restricted. The German gunners had had experience in operating with aeroplanes as range-finders, while neither the Russian aviators nor gunners had had any experience at all. In other words, the Russian army was almost unprepared for employing aeroplanes, as the United States army, with this exception—that Russia had 400 experienced aviators, whereas we have less than a dozen; Russia had about a thousand aeroplanes, while the United States army has only ten.

Russia is now building large armoured biplanes intended to carry pilot, gunner, a machine-gun, and a load of bombs at a speed of eighty miles an hour. These machines are the "pusher type," the gun is mounted well forward to afford a maximum area of fire, and the gunner has a wide range of observation.

Russia is also ordering flying-boats of the "America" type in this country. The delay, so far, has been due to the inability of the Russian Government to get aeromotors of between 140 and 200 h.p. These motors were not available in any number in the United States until the beginning of this year, but when they became available, and a number were set aside for the Russian Government, official "red tape" held up the orders for many weeks and the motors were sold to other countries, which also bought the output of the aeroplane factories for months to come. So Russia had to wait.

AUSTRALIA.

The "Sydney Herald" says that an inventor, named Roberts, has devised an Aerial Torpedo in that city capable of strafing Zeppelins. The invention was first produced some four years ago, and was offered to the British Government for £100,000. It is said that the scheme is now offered to the Government gratis, and,

according to report, the N.S.W. Government is paying the expense of the first demonstrations. Apparently, the idea embraces a miniature aeroplane carrying high explosives, controlled by wireless, but it is not apparent that the initial difficulty of Zeppelin strafing has been surmounted, namely, that of finding the airship in the dark. Until this is done the invention of lethal weapons is waste of time. "First catch your goose, etc."

Apart from this it is only hoped to control the torpedo from a distance of two miles, and, naturally, it would be hopeless to try and catch a Zeppelin travelling at 50 miles an hour at 8,000 feet with an instrument of such a limited radius of action. And, anyhow, the idea is several years old.

* * *

It is reported that the Federal Executive Council of Australia has approved the formation of two "half-flights" of aeroplanes for the Australian Militia, one "half-flight" for New South Wales, and the other for Victoria. The initial tuition is being carried out at Point Cook, and each section comprises two officers and twenty men, and a Corps will gradually be built up from this start.

* * *

It is reported from Australia that Lieut. R. Williams, who has acted as an Adjutant at the Point Cook Flying School, and Lieut. Seymour have sailed for India to join the Commonwealth Aviation Corps, commanded by Captain H. Petre.

* * *

The "Melbourne Age" of July 14th prints the following letter from Captain T. W. White, of the Australian Flying Corps, with the Indian Expeditionary Force, who has, under date June 3rd, written as follows to his parents from the Persian Gulf:—

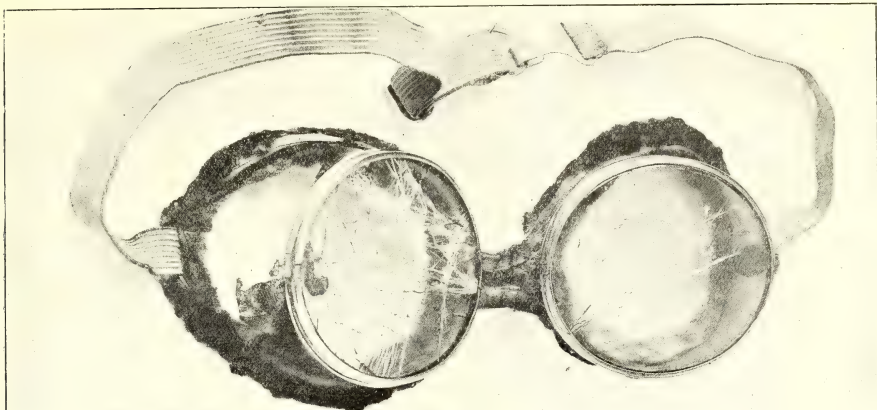
"Our aeroplanes (we have two erected so far) are Maurice Farman biplanes, with no front elevator (called a shorthorn), and with one (called a longhorn). On Monday morning at dawn Major Reilly, on the shorthorn, with Major Broke-Smith as observer, and Captain Petre on the longhorn, with Lieutenant Brown as observer, flew to a small island, on which there is an Arab mud village, about 50 miles by river and 40 by aeroplane, and where we had sent four machines.

"There they received orders to fly over the Turkish positions and reconnoitre. Major Reilly also took three bombs, which he intended to drop to try the new sighting arrangement he had made. As the whole country is flooded for hundreds of square miles, the attack took the following form." (Here follows a general description of the action.)

"The aeroplanes collected some useful information about the Turkish position on Bahren Island and their positions farther north. Major Reilly also dropped his three bombs, but did no damage. Both machines returned to our camp about 4 p.m.

"I had my first experience of real active service on June 2nd. The Turks were holding a position about five miles north of the Arab town of Qurnah, which is situated at the junction of the Tigris and the Euphrates rivers, and which is supposed to be the site of the Garden of Eden. The British have held this town for about six months, although in April a large force of Turks, Kurds, and Arabs moved round them and threatened Basra. The force, numbering about 20,000, was defeated by a British and Indian force, the Turks losing 6,000 and the British 2,000. The bulk of the fighting fell to the — and — Regiments, which were almost wiped out. The average loss per regiment was greater, I believe, than at Neuve Chapelle.

"I asked to be allowed to go, and was detailed as observer with Major Reilly on the shorthorn machine, only one machine being sent. We left camp at half-past 4 a.m.



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The weather was fairly cold. It appeared as if we were flying over the ocean, as very little land is visible above the floods, and the course of the Tigris can just be seen. Occasionally small islands are passed, or date plantations deep with water. We flew high, as it would be very awkward in case of engine failure, and as the Arabs are not always friendly, so passed over the islands. After about 30 miles we could see the bombardment of Bahren Island, about 20 miles away.

"We landed at —, at 6.20, the trip taking an hour and three-quarters, which was very slow for forty miles, but we had a strong head wind. The machine has a dual control, and can be flown by either pilot or observer. I flew it for a great portion of the way. The machine is a new one to me, but I did pretty well.

"On arrival we received orders to fly over the Turkish position and try to locate his guns at Bahren; also to mark in the entrenchments on the map, and also to try to locate a gun on the Turkish right, which had been replying, and was supposed to be concealed among some of the Arab villages. We started off, and passed close to Bahren. The shrapnel was bursting well over the trenches, and the larger shells were kicking up the dust. We flew on up the river, and came up with a large paddle-boat, with big lighters alongside, going north, and crowded with Turkish soldiers. There were crowds of mahalas (Arab sailing boats) and ballums (canoes), and several small steamers, and about five miles farther up another paddle-steamer, with lighters, and packed like the other. We flew over the town of Rotah, where large earthworks and gun emplacements had been made, and this, too, the Turks were evacuating. We flew north as far as Sakricka, a little to the north of which is Ezra's tomb, about 60 miles north of Basra. In all the towns and from all the camps the Turks were embarking, and making north as fast as possible.

"We started back, and dropped a bomb at the first paddle-boat, and two at the second. They were blazing away at us all the time. I flew the machine while Major Reilly dropped the bombs, but, although they went close, they did not strike them. We were flying high, because we were so far into the enemy's country. Also the horizon was not distinct enough to use the bomb sight accurately, so that it was difficult to do any damage. We returned to —. I wrote a message to say that the Turks were retiring northwards in all available boats, and had evacuated all their positions, also that there were no obstacles in the river to impede pursuit. This message, put in a tin, with streamers attached, Major Reilly threw out after we had volplaned down close to the gunboat, on which was the General, but the tin caught on the struts by the streamers, so I wrote another, and this one I threw safely into the river, and it was picked up.

"We then flew off to the west, to try and locate the gun on the Turkish right. We flew low, and passed over many Arab island villages. The inhabitants are known as marsh Arabs, are very fierce, and mostly on the side of the Turks. In some of the small ones the people just scurried out of sight when they saw us, but in most of them they fired at us. They use black powder in their cartridges, and we could see them through the glasses quite distinctly potting at us, but they are not the best of shots, and didn't even hit the machine. We could see no gun, as the Turks had evidently removed it, so returned to —.

"Altogether it was most interesting, and we had had a good day. Although we had not hit them, we had evidently helped to scare them, for when Captain Petre carried out a reconnaissance the following day they were not to be seen. I flew the machine back (40 miles), and got there in 25 minutes, but the wind was, if anything, favourable.

"I was rather pleased at being present at the day's work, especially as I was the first Australian to have been in

action here. We fixed on a landing-ground, and to-day sent most of the mechanics up by steamer. On the way back I brought the despatches and letters down from the front for the first time, and I believe we are now going to have a regular aerial post from our base here to the fighting line, so I suppose that I unknowingly pioneered it. I will be stationed at the base here, but on the arrival of some more machines expect to get plenty of flying."

A ROYAL AERO CLUB MOVE.

It is now announced that commencing on Tuesday next, September 14th, the Royal Aero Club will be open from 9 a.m. to 10.30 p.m. instead of closing at 7.30, as hitherto.

There has been a general demand for the extension of the hours of opening for some time past, and the arrangement which is now being made is intended as a step towards further developments if it is well supported.

It is certain that in the future the Royal Aero Club will be one of the great social clubs of London. In the immediate future it should become an important Service club, where officers of the Flying Services can meet and "talk shop," and exchange experiences, to their mutual advantage on active service and for the ultimate good of the progress of aviation. It is therefore greatly to be hoped that some of the older officers of both Services will make a practice of visiting the club as often as possible so as to set the proper tone for the younger members.

In the past few months a large number of temporary commissions in the Flying Services have been issued, and the holders of many of them have joined the Aero Club. It will be considerably to the advantage of some of them if the education of their own messes is continued in their club. Moreover, some few of the earlier members might be the better for an occasional piece of advice from senior officers on the subject of behaviour in public or semi-public places.

It would be a great improvement if it became possible, owing to increased support, to start a dining room, for probably a decent place where they could lunch or dine, and talk aviation, would attract many members who now see no reason for joining, and it will be a thousand pities if the extra hours of opening merely mean increased consumption of alcohol by present members. Mr.—(pardon, Lieut.-Commander) Perrin's able *locum tenens*, Mr. Stevenson, has more than enough work to do as it is without having to undertake the additional duties of honorary provost-marshal.

Undoubtedly the step taken is in the right direction, and it is sincerely to be hoped that members will back up the Committee to the utmost of their ability so that the Club may become a comfortable home for its members and yet be a dignified institution worthy to represent the great Services, science, sport, and trade of which it is at once the centre and the public representative.

THE R.N.A.S. COMFORTS FUND.

Now that the turn of the summer has arrived, and another winter is approaching, it is to be hoped that the Fund raised by Mrs. Sueter, wife of the Director of the Air Department, which has done so much for the men of the Royal Naval Service, will again blossom forth to meet the coming demands.

A case of gramophone records, magazines, mufflers, and smoking material was recently sent to a kite-balloon section in France, and was acknowledged as follows:—

"Dear Mrs. Sueter,—Your parcel of records, etc., which have been so long delayed by post has at last arrived. I have great pleasure in informing you that we drew lots for the various comforts you sent, and everyone is most grateful to you and your friends for same.—Yours grate-



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fully, S. H. MORGAN, Air Mechanic, Kite-Balloon Section, France.

The following cash contributions have been received recently:—August 3rd, Mr. A. de Moleyns, £1; August 8th, Mr. and Mrs. A. Wright, £5 5s.; August 16th, Lady Murray, £5; September 3rd, "R. S. T.," £10 10s.; making total to date, £1,022 13s. 7d.

A GERMAN HERO.

[According to Mr. Balfour the German airship pilots do not know where they are dropping bombs unless told by the British Press. A correspondent sends the following story illustrating what we may hope to see if the official policy of silence at home turns out all it is cracked up to be.—Ed.]

Ludwig von Ludwigshafen was a proud man the day that he was ordered to leave off filling sausages with blotting-paper, and undertake a Zeppelin raid on England. Hastily discarding the rough sausage-filler's smock, he quickly donned overalls and alpenstock, and in five minutes was ready for the ascent.

Arriving at the pierhead, he gave a low bird-call, and the huge form of the airship emerged slowly from the water—for it was one of the latest type, and, besides flying, it could travel under water like a rattlesnake, while a special attachment at the stern gave out a low crooning noise whenever an enemy aircraft approached. The aged Count himself explained the mechanism and controls to the new and eager pilot, who, in another five minutes, was seated in the driver's seat; and the next moment, with a rousing "Tally Hoch! Tally Hoch!" from the spectators, Ludwig dug his spurs into the gas-bag and glided off.

Up! Up!! Up they went!!! Ludwig felt the moment of his life had come. He was a man of imagination—indeed, had not his book, "The Honour of the German Army," been described as one of the finest fiction works of the year—and already he pictured the newspaper posters in Berlin emblazoned with the deeds of "Ludwig the Luftschiff Lifter," as he felt sure he would be admirably called. Unaccustomed to flying as he was, it was as much as he could do to prevent the air-pressure making his head swell.

For hours they floated on, and for long they had been able to distinguish nothing at all below them. In vain the pilot and his crew referred to their Baedekers and maps, for the night had enveloped everything in murky darkness. At last Ludwig calculated that he was just approaching London, and, ordering the crew to prepare the bombs, he leaned over the side and once again endeavoured to locate his exact position. All he could make out was a stretch of water which he took for the Welsh Harp; a little later, as it became slightly lighter, he dimly discerned some white-topped edifices which he recognised as the White City, where in former years he had been employed as a waiter.

He gave a curt word of command, and instantly the men began to heave the bombs overboard. Crash! Bang!!! Bang!!! Again and again he could hear the explosions, and he fancied he heard other shots below, which he took for anti-aircraft guns. When he had exhausted his supply he turned the airship round and went back as fast as he could. As he hailed Germany with the arrival of the morning light, it was apparent from his direction that he had drifted out of his way not a little on the return journey. But that did not trouble him, for he soon found his bearings again, and a glorious feeling of success and self-satisfaction overcame him as he imagined the praise he would receive when his superior officers read in the British newspapers of his destruction of London.—[Not if the Censor knows it.—Ed.]

This, however, was what they read in the London "Daily Mail":—

"Last night a Zeppelin airship, which travelled from Germany, rendered material assistance to our Fleet in a further attack which was being made on the Dardanelles. The airship did great damage to important military buildings at Constantinople. No explanation was offered as to the co-operation of an enemy airship, but it is supposed that the Kaiser intended the visit as an encouragement to slackers in the harems of Stamboul."

THE R.A.F. WAR FUND.

The following communication has been received:—

"Sirs,—Herewith please find second audited accounts of the R.A.F. War Distress Relief Fund for the period February 28th, 1915, to August 22nd, 1915. I shall be glad if you will be kind enough to find it a place in the next issue of your paper.

"It may also be interesting to announce that the total receipts for the period October 11th, 1914, to August 22nd, 1915, have amounted to £1,459 15s. 2d., and the expenditure £1,239 4s. 9d., leaving a balance of £220 10s. 5d.

Yours faithfully,

(Signed) JAMES GRAY,

Hon. Secretary R.A.F. War Distress Relief Fund.

RECEIPTS.	£	s.	d.
Balance from last Account	114	1	7
Weekly Contributions up to and including week ending August 15th, 1915	847	19	3
Proceeds "D" Dept. Social and Dance	12	0	0
„ Dining Club Sub-Committee's Social and Dance	1	2	0
„ War Distress Relief Fund Social and Dance	1	2	9
Interest on Deposit Account	0	2	2

EXPENDITURE	£	s.	d.
Royal Flying Corps Aid Fund	82	0	0
"Aldershot News" Prisoners of War Fund ..	69	0	0
Belgian Relief Fund	67	0	0
Farnborough Court Military Hospital	67	0	0
Connaught Hospital	60	0	0
Cambridge Hospital	60	0	0
Serbian Relief Fund	56	0	0
Minley Military Hospital	56	0	0
"Weekly Dispatch" Tobacco Fund	50	0	0
Royal Surrey County Hospital	49	0	0
Royal Naval Air Service Comforts Fund	28	0	0
Camberley Military Hospital	22	0	0
St. John's Ambulance Association	18	15	0
British Red Cross Society	18	10	0
French National Relief Fund	3	0	0
Relief of local cases of Distress	45	13	0
"John Bull" Relief Fund	2	0	0
Bank (stamps on cheques)	0	16	8
Postage	1	2	8
Balance at Bank	69	17	3
Cash in Hand	0	13	2
Deposit Account	150	0	0

£976 7 9

(Signed) E. W. JACOBS, Hon. Secretary.

(Signed) R. C. CHAPMAN, Hon. Treasurer.

Audited and found correct.

(Signed) R. E. HAZELL, 26.8.15. } Hon. Auditors.
P. E. CROSSON }

A NEW ADDRESS TO BE NOTED.

The British Aeroplane Varnish Company, Ltd., whose name is associated by everyone in the trade with Titaine dope, have taken offices at 166, Piccadilly, W. This is certainly a very sound step, because the number of institutions pertaining to aviation whose homes in the present and the past have been at 166 has caused this building to be regarded as a species of Mecca (or shall we say Rome?) to which all highways and skyways lead those concerned with aircraft.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Efficiency in Production.—(Continued.)

BY ANGLO-AMERICAN.

THE TAYLOR SYSTEM.

What is wanted is a means of measuring accurately the quantity and quality of the work done, and of apportioning the payment accordingly, a system that will safeguard the interests of the employers, and not do the workmen out of the fruits of their exertions. The scheme which comes nearest to doing that is the Taylor System, which was built for that purpose, among others. Those who have not made the acquaintance of the Taylor System may wish to know what it is.

It is—must it be confessed?—an American system. Now, having made that damaging admission, and knowing that anything I say may be taken down and used in evidence against me, I must proceed to clear my character. I cannot plead guilty to any extravagant admiration for American methods in general, and I have no predilection in that direction, nor do I hold any brief for the Taylor System. I am not an exponent of its principles, and am in no way interested in “boosting” it.

I advocate it solely because, judging by what I know of its possibilities, I believe it would prove useful at the present juncture as a means of conserving and utilising our resources in craftsmanship.

American methods are regarded with a measure of suspicion in some quarters, and, no doubt, some of them have earned it, but they are, at all events—like a certain famous “curate’s egg”—excellent in parts. And there is no reason why those parts that are good and suited to the British temperament should not be adopted.

British engineering once learned a great and valuable lesson from America—a lesson which we learned so thoroughly that now we hardly realise, perhaps, that we learned it from America. That lesson was the use of capstan lathes, and jigs and other labour-saving devices. We should, in all probability, have been content to go on to the end of the chapter working laboriously to scribe lines more or less accurately, and never getting two articles alike, if it had not been for the disturbance caused by American activity culminating in the excitement over the Allis contract for the Glasgow Corporation.

When it was found actually cheaper to import stationary steam engines from Milwaukee than to make them in Glasgow then British engineers began to realise that, after all—unnatural as it might seem—American methods must be superior to the British in some mysterious way, and they set themselves to learn the trick, and *learned it*. The Americans had co-ordinated their tools, and that gave them the advantage.

ANOTHER AMERICAN LESSON.

Having about reached the limits of tool development and specialisation, they have turned their attention to the co-ordination and organisation of the human element, and may some day be in a position to teach us another severe lesson unless we learn it voluntarily in the meantime.

The scheme is embodied in the principles evolved by Winslow Taylor, and commonly known as the “Taylor System.”

It is not a system of drive or ingenious means of keeping men on the rack.

It is not a system of “push and go.”

It is rather of conservation of energy—or, in other words, *efficiency*.

It is a scheme for giving a man an opportunity and the encouragement to do the best that in him lies and make the most of himself.

It has many ramifications and very wide application, and cannot be stated in a nutshell.

It is a system of laying out labour as scientifically and planning work as carefully as the tool-planning alluded to above

It consists in its essence of applying to work principles analogous to those adopted by the trainer of an athlete.

That is to say, the workman is trained to lay out his powers to the best advantage, not wasting any energy.

Thus he obtains the utmost possible result at the least cost of exertion, and, consequently, gets through more work with less fatigue.

The man is paid in direct proportion to the work he turns out without any artificial limit like “time and a third.” This is an essential feature of the scheme. He must have unlimited incentive, or the whole business breaks down.

A WORKING EXAMPLE.

The results obtained are really astonishing. Few people realise the amount of energy that runs to waste ordinarily on common operations that we think we can perform quite well, and one is apt to be sceptical when the claims of the Taylor system are first met with. I was myself; I confess it.

I read one of Winslow Taylor’s books in which he describes the application of his principles at the Bethlehem Steel Works to the very prosaic job of unloading pig iron from railway wagons and stacking it in the yard. That is not the sort of job that would appeal to the imagination as lending itself to scientific treatment.

He describes how he reconstructed the whole job, how he selected men whom he thought would be most suitable, how he instructed them and set them to work. Then he states the results obtained, and I “smiled some,” but a friend who had had experience with the Taylor system reproved me for my irreverence. He said that though he was not acquainted with that particular case the improvement claimed was quite consistent with what he did know of its operation elsewhere, and he was quite prepared to believe it.

I forget just what the improvement claimed was, but perhaps in any case it would be as well not to state it. It would hardly be seemly for readers of a sober technical journal like this to be caused to smile. I dare not risk it. Suffice it to say that the performance of a Taylorised workman is to the performance of the same man working haphazard as the performance of a trained athlete is to what it would be without any training.

TAYLOR PRICE FIXING.

There is no great difference between the Taylor system and the ordinary bonus system in broad outline. In fact, one might say that the Taylor system is only the bonus system logically developed and scientifically worked, or a sort of glorified bonus system. A man is rated at so much per hour and jobs are “priced” by time allowances as in the bonus system, but there is no arbitrary limit to production or earning powers. Prices are scientifically calculated and fixed, and when once fixed they are fixed, and are altered only if a quicker process is devised or discovered by the work planning department, and not if a man of exceptional dexterity lets himself loose on a job.

If a man happens to have a special aptitude for one particular operation enabling him to turn out an abnormal amount of work in that line he does not “spoil the job” for others of average earning capacity; nor can a man, by deliberately hanging out a job, get the price increased so as to make things easier in the future.

There is one difference which should appeal to those who have suffered from the vagaries of rate-fixers under ordinary piece-work or bonus systems. When a rate-fixer has scrawled a time allowance for a job on a time-card his responsibility in the matter has ceased. He is not interested in whether the victim can “make his time” or not, and has no further concern in it—except when he is challenged by an outraged and irate workman to “Let’s see

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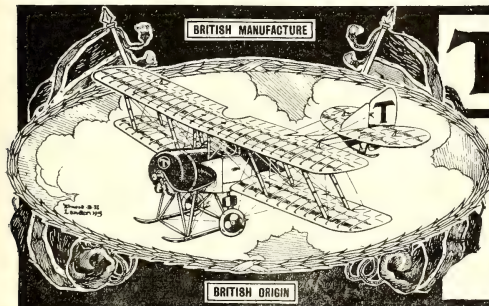
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you do it in that time," in which case the orthodox procedure is loftily to ignore the challenge and walk off with as much dignity as it is possible to summon, or assume.

Under Taylor management, however, when the work-planning department, which takes the place of the rate fixing department, issues an instruction card with a time limit on a job they guarantee that the job can be done in the time specified, and if a man cannot "make his time" at it they will come and show him how to.

HOW REFORM IS WELCOMED.

Unfortunately, workmen are apt to look askance at any attempt at Taylorising and to oppose its inauguration, somewhat vigorously sometimes, as I have good cause to know. I have known the men in a locomotive shop the other side of the Atlantic express disapproval to the extent of throwing inch nuts at the hapless individuals who had the matter in hand. Fortunately, they stopped at inch nuts, and did not proceed to throw axle-boxes, or even big end brasses, or these remarks might never have seen the light. But strenuously as it is opposed in the first instance the invariable experience is that if one or two men can be persuaded to give it a fair trial, as soon as they get to know it they like it, and start clamouring

for more of it, and those who are not under the Taylor system start clamouring to be put under it.

One advantage of the system is that it can be applied piecemeal, that is to say, a shop can be taken man by man, machine by machine, or bench by bench, and Taylorised by degrees without affecting the general working, and it could be de-Taylorised similarly if required, but it is doubtful if de-Taylorisation has ever been required. It would be perfectly safe for a management to promise that a man need not continue on Taylor system if after giving it a fair trial he prefers to return to the old g-o-a-s-y-u-please methods. There would not be many takers for it, however fiercely they might have opposed its inauguration.

In view of the swindles that have been worked off on workmen in the past it is not surprising that they should be suspicious of anything that might appear to them to be another attempt to over-reach them, but it is unfortunate in this case, none the less. One of the most serious obstacles to smooth and efficient working is the atmosphere of distrust between the management and the workmen, and the attitude of suspicion of the latter.

(To be continued.)

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

PROPELLER FITTING.

However, assuming this trial to be over, and the first choice of a working propeller—you may have several other guesses coming on this—duly made, see that it is perfectly balanced, with the centre flange holes bored true, and of a size to be a good driving fit for the bolts. Tighten up the nuts alternately all round, anyhow. If for the work of attachment the nave has been removed, when it is set on the motor-shaft again see that its covering nut is set home as hard as it can be; making sure with a few blows with a mallet—never bring anything resembling a hammer near the outfit—on the end of the spanner used, before fixing the locking plate.

Appropriately we may here discuss the procedure in the case of having to renew the internal sleeve after a bad propeller smash; which needs the nicest fitting. Never mind the book; make a thorough job of the fitting, and chalk or indigo the whole of the crankshaft taper just as if you were going to line a bearing on it; which, in effect, you are, only the bearing will be a stationary one. Then offer on the new sleeve without the key; and invariably you will find that it joggles, fits where it touches, and does not go within half an inch of its designed setting home. The chalk will have come off all the high spots; so coat the shaft taper thickest on these with a cream of crocus-powder and oil, and grind the sleeve on until it beds snugly on the shaft, giving a little extra grind to the top end where the sleeve thickens. Then, having washed the shaft and sleeve clean with kerosene—this is where half-penny newspapers prove really useful, more so than cotton waste—set the sleeve on and drive on the nut behind it as before, dead hard, letting the sleeve so far up the shaft that there remains just half a thousandth clearance between its end and the steel distance-piece next the ball-bearing. Then take the sleeve off again, to be finally replaced with its key, making sure of the aforesaid clearance to finish the job.

THE APPROPRIATE RADIATOR.


Reverting, however, to the motor installation. The proper radiator is one in which design for surface efficiency is the main feature rather than actual capacity. You might be original here and have the obviously necessary but hitherto non-existent gauge glass fitted into one side of it. It should, at any rate, hold at least as much water as the cylinder jackets do altogether. And then leave its upper third part empty. Thus you will give the water room to

move without straining the connections, the cylinder jackets, or the radiator itself—in which the metal should be on the thin side, more so than for a car—and withal, without over-cooling the motor to lower its efficiency, and risk the carburettors freezing during high flights. For these, and in any case lag the induction piping and the hot-water leads to the carburettors with asbestos cord, skinned lightly over with a lick of varnish to give it the cohesion this lagging usually needs so badly. These arrangements, at any rate, should help to maintain the water temperature near, but not above 180 deg. Fahrenheit. It is also of the first importance to see that the radiator is so installed that its top in all circumstances is at least eight inches above the top of the water outlet connection. On the whole, the most favourable type and installation for the Beardmore or any other vertical aeromotor is one of the oval medallion-shape, mounted in front, if the scheme of the machine permits. Finally, see that the filler cap is fitted with a treble thickness washer, so that the pilot may not only escape a hot shower bath, however necessary, but also not imagine that the cooling system has sprung a fatal leak. When filling, use rain-water, or, at any rate, water without any trace of lime in it—motors do not suffer from rickets, as a rule—and leave a margin for expansion.

In the same way the petrol tanks—to give the motor all its chances—should be fitted in the aeroplane so that they will always be at least eight inches above the carburettors, no matter if they are nearly run dry, or the aeroplane is reaching after Zeppelins. To make quite sure in these cases—for one cannot afford to spoil a special aeroplane design to please its motor—it is best to use a final delivery bottle-tank, holding about a gallon, hand-pump, or otherwise pressure-filled. In any case see that the joints are of the best design, preferably long-tapered metal-to-metal ones. Do not trust to red fibre or any other "splittable" washers for the joints next the tanks, at any rate; and those next to the carburettors should be made of fairly thin but dense and elastic felt. The delivery pipes should also have at least a single turn coil to avoid the effects of vibration or a bad landing; in fact, two such turns are as good as a life insurance policy, except to raise money on.

THE TRUTH ABOUT PETROL.

Finally, test the petrol supply installation with the lightest spirit that can be had, by all means; but when



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it comes to everyday running, for goodness' sake forget all the nonsense you have probably imbibed about this specific gravity or that one. Those dear convivial souls you meet in the petrol trade are the very best created, but they do tell the tale in the way of business. Yet not to you or me! Quietly out of their hearing, the facts are that so long as a given sample of motor spirit is distilled from a crude oil with a petroleum, not a pitch base, in the first place, and has no trace of sulphur in it, its motor quality begins to rank, irrespective of gravity. Then, if it leaves no residue on cream-laid notepaper, it is at least clean enough not to soot up any motor that has an appropriate-sized carburettor jet. If it also leaves the palm of the hand dry after three or four seconds' exposure, its evaporation is probably all right. And finally, if its specified distillation-scale shows an even graduation of bulk percentages on an evenly lessening rate of temperature increases up to dry, you may be sure of its power. Nothing else matters. If it shows all this, it is the best for any motor's use, and it may well do so at any gravity between 0.680 and 0.730. Indeed, the heavier the quicker may this or any other motor get roaring miraculous drunk upon its fumes.

CONCERNING LUBRICATION.

Next, of course, to the cleanliness of the petrol comes the unctuous rectitude of the lubricant. The Beardmore, like any other aeromotor that is not a rotary, is not difficult to satisfy in this regard, so long as an oil of strictly mineral origin and the appropriate viscosity is used. The qualities to be sought, then, are cleanness when held up to a strong light; colour as may be—a light olive usually; plenty of body, yet a fairly free flow; and a high heat resistance. The best types, incidentally, that I have seen, combining all these points, is a certain "Treble X" kind, refined, or at any rate sold, by the "Monogram" people; and castrol of the right grade also gives very good results. As I say, while choice of lubricant is really as open as the choice of petrol, it is best to stick to an approved brand, unless you know oil rather better than well.

However, no oil can do itself justice unless the conduit arrangements are accurately fitted. So, in fitting the extra oil reservoir—that is to say, the final delivery receptacle—see that its bottom is about two inches, and in no circumstances less than one and a quarter, above the bottom of the pump chamber. Also, keep the connection between the two—which should have a bore of at least half an inch—as short as possible. Furthermore, lag all these parts so that under no circumstances will they be affected by the temperature of the surrounding air. Thus the coldest of weather or the highest altitudes will not set up freezing or in any other way check the free flow of the oil.

The Beardmore aeromotor happens to be sent from the works with the crank-chamber filled to the normal level, but with no oil in the pump-chamber. Hence the first thing to be done is to see that the crank-chamber was actually filled, by draining it off and re-filling; then filling the pump-chamber; and finally turning the motor over—not running it—for about forty revolutions to get the oil leads thoroughly primed. For this purpose, then, the obvious thing is to take out the spark-plugs. For on no account should the motor be run until its entire lubricatory system is brim-full; indeed, a little excess is no harm on this first occasion. This result established, however, the sooner the motor is run for a few minutes the better. The crank-chamber oil will have been poured in through the breather tubes on the carburettor side—3 1/3 pints for the 90 h.p. and 4 pints for the 120 h.p.—so that the first fifty revolutions or so will serve to distribute it in the right quantities for each different chamber. Remember at the same time that this is only the splash portion of the lubrication, and that the force-fed supply from the filled pump-chamber will only last an

hour and a half at most in the 90 h.p., and only a third of that time in the 120 h.p. model.

As I said before, the pump mechanism arrives properly adjusted, and should not be interfered with; also, the wear is negligible; so this part needs the least attention of all. However, immediately after this first trial run, the unions of all the oil connections should be gone over carefully with a spanner, one by one, and set home. The Beardmore aeromotor is built with the utmost precision, so no extra washers or any sort of packing will be needed. After this, the screw-down greasers should also be gone over, refilled if necessary, and screwed down; and as a very essential accessory, a large grease-gun—so placed as to be readily worked by the pilot—should be connected up to the water-pump with a copper tube of ample bore. Finally, all external moving parts should be carefully—and constantly—lubricated with an oil-can.

(To be continued.)

A CURIOUS CLAIM.

The following letter has been received:—

"Sir,—On page 256 of your last issue (September 1st) you illustrate, without saying so, the front of what is a Walkden double-weighted aeroplane. It is that because the two heavy masses (engines) are spread laterally, and are separately concentrated at the forward ends of longitudinal rods or frames projecting forwardly of some of the planes. (Patent 8531/09, etc.)

"As so disposed, the engines, by reason of being the heavy masses possessing inertia, resist sudden changes of lateral pose and of wing-tip speed; they also produce centrifugal righting couples when the machine tilts to one side, and possess other properties. All these properties, mentioned in my smaller book, 'How to Understand Aeroplanes,' have been made well known and appreciated through my text-book, 'Aeroplanes in Gusts, Soaring Flight, and Stability,' which discusses them at some length.

"Just as you did for me last February, in the case of the double tail action, perhaps you will not mind mentioning at once that the sole building and licensing rights for all such double-weighted constructions in France as well as in Great Britain are in my possession, and I am prompt to exercise them. For that reason I expect the construction to be alluded to in connection with my name, whatever a particular machine may properly be called without my alterations and improvements.

"(Signed) S. L. WALKDEN.

"September 5th, 1915."

[The machine is a Caudron, the designers of which have probably never heard of Mr. Walkden, and, as the editor of this paper had never heard of the "Walkden double-weighted aeroplane," the omission was somewhat natural.—Ed.]

MR. PEPYS AT HENDON.

(The representative of THE ARROPLANE who usually attends Hendon writes saying that he feels his readers may weary of the somewhat monotonous nature of his weekly record of the flying at that aerodrome. He therefore arranged with Mr. Samuel Pepys, Jun., to go there last week-end, and now sends the following extract from his Diary.)

Saturday, September 4th.—A cold day and much wind. After lunch by coach to Hendon in Middlesex, to visit the flying fields, where they say is much sport to be seen. A pleasant journey, all but the last part in Colin Dale, where the road is indeed in bad condition.

At the aerodrome, which is a spacious field and good to look upon, found a strange apparatus of most venerable appearance in the air. They told me this was a box-kite, driven by one Osipenko, a Russian, who joined us later, and I was introduced, though like no Russian as ever I heard of, believing them all hairy men with

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great beards, and him never a hair on his face that I could see. But he smiled often, and missed out many words when he spoke, and was easy to see he was not English.

Then he took out another apparatus of greater size, with many seats, and I watched two voyagers climb in, one of them a right pretty wench, and had the best legs ever I saw. It is indeed not easy to enter these machines, but I observe that all passengers return to earth well pleased with themselves, and, for myself, I can see no danger in the experience. I noticed two other vehicles, or it might have been the same one, for I could see no difference; but a man with a great voice, speaking through an instrument like a can for milk, did describe them as Master Manton and Master Winter, flying on "Grahame-White biplanes having fifty horse-power Gnome engines," which I understood not, but it sounds of fearfull import, and must indeed be a great responsibility.

The same attendant, who had many medals on his coat, no doubt for skill in musick and singing contests, then announced that air-journeys could be bespoken at the rooms beneath the structure whereon he stood. I had it in my mind to engage a vehicle for the experiment, but they told me the cost was two guineas, which I thought too large a sum, with the war now on and my winter undercloaths yet to buy. So I contented myself with watching the proceedings, which was most interesting.

The wind being now more moderate, I saw other flying men, some pretty displays being done by Master Roche-Kelly, who is, they say, from Ireland, yet wears he not the Celtic fringe, and Master Prodger, who formerly lived in America among the wild cattle of that country, and is now living among the novices at Hendon. Was told these two gentlemen taught many to fly on Wright machines, which at first I thought was meant for a merry jest, but now perceive the meaning. I hear these Wright aeroplanes belong to Master Beatty, who is from America, where he hath long been flying, and is now set himself up a large School to teach others, whereof he hath a goodly number. A shrewd business fellow this, though wearing a coat of strange pattern.

Met some neighbours of mine from White Hall, and did discourse much of the latest news of the Air Services, and the mysterious treatment of certain contractors, and the resignation of Mr. Isaac, who hath been so long a prominent man at this place, and there is much talk concerning it. But I know nothing of the affair as yet. and so to the Mitchell Hostelry, where we took wine and talked further of the disbanding of the armed coach bands, of which I said little, thinking it not discreet to speak what was in my mind. But there are some I know who have waited for nigh on a year to do good work against the King's enemies with these same armed coaches, and now go to breed rabbits in the country, needing some more exciting occupation.

Having drank many healths and feeling a slight giddiness in the head, repaired to the outer air again, and saw Master Birchenough on a new apparatus, which he took so far into the clouds I thought would never return, but he did in safety, as I am told is always his custom these three years or more, and the Lord be praised. Master Baumann also was in the air on a blue-coloured vehicle, and

his cozen on another, and then, being somewhat weary, I came back to London, while the schools were busy flying along the ground, which did not seem a difficult task. But everyone was mighty glad to see Mistress Stocks there, who had not been for more than two years, and looked quite pleased to be among her old friends once more. And I hope she continue to mend.

September 5th (Lord's Day).—This being a warmer day, with little wind, as far as can be told by observation of the smোক from the chimney of my apartments, did decide to take my cozen Doris to the flying field, as I had before promised, she being mightily pleased to watch the sport.

First to lunch at Hatchett's posting and eating house at the White Horse Cellars, where we arrived at ten minutes before one, and the door not yet opened, whereat I was much vexed. Walked with her along Piccadilly a while, and then Doris, being thirsty, would not begin her eating without first a Martini, a foreign drink which ill suits my stomach, besides being against my resolves for economy during this damnable warr. Lord knows what these young women be coming to nowadays, what with cigarettes and cocktails and driving motors and such.

So I was minded to do our journey thence by omnibus instead of by hackney-coach, as I had intended, which is pleasant, but more expensive, so after lunch by omnibus to Hendon, having with difficulty got two seats on the roof, for all that the other passengers were rude people and tried to get on first, but I used my elbows to good advantage. Doris tells me on the way of her brother who is home from the warr with some of the enemy's bullets in his ankle, whereat she is not greatly displeased, knowing him to be safe, and asks me, should he recover too quickly, to kick his leg by chance, which seems not patriotic, but how like a woman.

Found many people at the aerodrom, and much flying to be seen. So many vehicles were going and coming that I could not take note of all that flew, but saw first Masters Manton and Winter, who carried passengers and were to all appearance making great profit for the Grahame-White Company, and Master Ross looked mightily content with the business.

Was glad also to see a new thing called a P.B., which a certain aviator whose name I am forbidden to mention, for good enough reasons, took up 6,700 feet high, and a terrible position to be in if one fell, but he did not, by the grace of God, and was glad I had seen this, of which more may be heard.

Master Irwing flew on an L. and P. biplane with great skill, and as he descended I heard a man say his engine was missing, which was an absurd error, for I could see it with my own eyes where I stood. Master Stevens also on a Hall Fuselage-Caudron (these names are beyond my knowing, but there it was), the very first time ever he went in this machine, but he did it in proper style, with no mistakes that one could see, being a most careful young man and modest withal.

Masters Prodger and Roche-Kelly came out again with their Beatty-Wrights, and the latter offers to take cozen Doris up, whereat she becomes most excited and was like to embrace him for joy. Having lent her my best coat and placed her in the seat, they ascended rapidly, and the biplane made many pretty evolutions, turning



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to the right and left and almost over, but not quite, and she tells me after it was most heavenly," and Master Roche-Kelly a perfect dear, at which I rebuked her, but he was indeed most kind and an excellent pilot.

Master Hall was also flying, and Master Beatty himself on his Caudron, and Monsieur (or whatever one may rightly call an exalted Russian) Osipenko took many passengers in the apparatus for five inmates, and I marvelled how huge a vehicle should be got into the air so easy. And being late, Master Hall brought us back to London with amazing speed and comfort in his new Cadillac, which is the best self-driven coach ever I was in, being silent as the grave, but much more pleasant, and passed every other car without effort, and cozen Doris said it was almost as beautiful as flying.

And so to dinner, for the Hendon air being as fresh as the denizens thereof, we were right hungry.—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
London	Fine	Fine	Fine	Fine	Fine	Fine	Fine
East Coast	Fine	Fine	Show'y	Show'y	Rain	Fine	Fine
Lake District	Windy	Wet	Wet	Fine	Misty	Fine	Misty
Midlands	Wet	Wet	Fine	Fine	Fine	Fine	Fine

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, R. Kenworthy, A. E. Mitchell and G. Virgilio.

Pupils with instructors on Beatty-Wright machines: Messrs. Bond (35 mins.), FitzHerbert (35), Hibbard (5), T. Jones (22), Litton (10), Morgan (30), Ross (10), Sampson (55), Theo (12), Thomas (30), Tolhurst (7) and Willmet (12).

On Caudron machines: Messrs. Begg (15), Bowick (10), Broadbent (10), Brown (25), Byrne (20), Cadogan (25), Campbell (15), Coates (15), Collett (5), Collier (20), Cowper (35), Cumming (10), Douglas (15), Fawcett (5), Gayner (35), Grant-Suttie (20), Hodgson (10), Hoskins (10), L. F. Jones (20), Kirkwood (5), Lashmar (30), Mellings (20), Moxon (5), Nash (25), Nicholson (5), Owen (10), Rimington (35), Richard (20), Stagg (10), Symington (30), Tremlett (10), Whincup (10) and Patterson (10).

On Tuesday, 2nd Lieut. W. N. Thomas flew for his certificate, going through each of the tests in excellent style and making particularly accurate landings.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

As seen from the list of instructors, Mr. G. Virgilio has now been added to the staff, bringing their number up to six. Mr. Roche-Kelly gave exhibition flights on Saturday; and on Sunday, Messrs. Beatty, Roche-Kelly, Prodder, Kenworthy and Virgilio all gave exhibition flights. Eleven passenger flights were taken.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Mantou, Russell and Winter.

Pupils with instructor: Prob. Flt. Sub-Lieuts. Gammon,

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AT THE LONDON AND PROVINCIAL CO. SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irving and C. Jacques.

Pupils: Messrs. Knowles and Lochett rolling. Messrs. Rogers, Franklin, Jamieson, Grimwade, Burton, Renton, Hordern and Roehford straights.

Eights or circuits alone: Messrs. May and Moynihan.

An excellent ticket was taken by Mr. C. W. P. May.

Machines in use: Three tractor biplanes.

The following pupils are making specially good progress: Messrs. Rogers, Sargood, Jamieson and Franklin.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with instructor on machine: Messrs. Griffith (49), McBean (12), Ball (12), Stewart (32), Hodgson (10), Bailey (16), Gallop (34), Reed (14), Liddell (36), Muspratt (7), Hughes (33), Prothero (23) and Bailey (8).

Eights or circuits alone: Messrs. Young (30) and Belton (58). These two pupils have accomplished much good flying and are both ready for their tickets.

Machines in use: 60 h.p. R.B. Caudron, 50 h.p. R.B. Caudron, and 50 h.p. Caudron type tractor biplanes.

Exhibition flights were made during the week-end by M. Edouard Baumann and M. Ami Baumann and many passengers were taken, the majority being officers.

AT THE HALL FLYING SCHOOL.

Pupils with Instructor H. Stevens: Messrs. Huggan (34), Russell (26) and Hatchman (32), all doing circuits and figures of eight with glide.

With Instructor C. M. Hill: Messrs. Watson (26), Littlewood (32), Wenner (28), Bayley (16), Drew (20), Hamer (6), Cook (10) and Bangs (4), all doing straights and half circuits.

With Instructor C. Bell: Messrs. Stirling (30), Hall (24), Broad (10), Brandon (36), Hooker (16), Sepulchre (8), Ackroyd (8), Lieut. Dalley (12), Bond (12), Camberbirch (12), Butterworth (12), Wilkins (12) and Drew (12), doing rolling practice or straights.

Machines in use: Hall (Government type) tractor biplanes.

Exhibition flights were made during the week-end by Messrs. J. H. Hall and H. Stevens on tractor No. 6; C. M. Hill and C. Bell on tractor No. 4.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with instructor: Capt. Bell (13), Mr. Coates (16), Mr. Ingham (15), Mr. Inglis (8), Lieut. Lander (17), Part (18), Ridgway (7) and Yates (16).

With instructor in passenger's seat: Messrs. Ridgway (30), Yates (18) and Reid (14).

Eights or circuits alone: Messrs. Macaskie (49) and Reid (10). Mr. Macaskie took first half of certificate in good style.

Machines in use: N.A.C. 50 Gnome propeller biplanes.

Several passengers were carried. During several mornings an annoying mist stopped flying, only being dispersed by a wind which was too strong for school work.

BIRMINGHAM.

AT THE MIDLAND FLYING SCHOOL.

Instructor for the week: Mr. S. Summerfield.

Most of the pupils were out with the instructor during the last few days, the chief ones in evidence being Messrs. C. Mento, C. Morley and Hoy Yam, the last two being new pupils.

Pupils doing straights or rolling alone: Messrs. L. Monfea, C. Mento, J. Tzesing, C. Chang, J. Munhon, C. Chong, C. Kayfong, K. Jokping and C. Morley.

Machine in use: Blériot monoplane.

The weather being so good the last few days has enabled most of the pupils to receive extra practice, with the result that most of them are ready for circuits. Mr. Summerfield has been busy with a 50-h.p. Blériot that is being got ready for the purpose, and it is hoped that it will be passed over to the pupils this coming week.

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THE AEROPLANE

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Edited by
C. G. Grey

Vol. IX. No. 11

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ON ZEPPELINS.

Mr. Rudyard Kipling has a curious method of concealing great truths in casual comments. In one of his recent articles on his visit to the French Front he delivers himself of the following remark:—

"No man likes losing his job, and when at long last the inner history of this war comes to be written, we may find that the people we mistook for principals and prime agents were only average incompetents moving all Hell to avoid dismissal."

The phrase was written of the German Crown Prince, but it applies to a great many other people. For instance, it might apply to the people who were charged before the war with the defence of this Realm against foreign aggressions, and one can think of several "principals and prime agents" in various walks of life, official and commercial, whom the description fits with aptness. It is well to bear it in mind particularly in connection with Zeppelin raids, whether attended with a certain measure of success—from the German point of view—or not.

There was a time before the war when we in this free and enlightened country looked down with something akin to pity on the poor German, hedged about with his innumerable notices that this, that, and the other was *verboten*. To-day, more things are *verboten* to us than to any German, and among the multifarious matters which may not be discussed is anything which might enlighten the British public on the subject of Zeppelin raids. Naturally, in so far as such discussion might impart knowledge to the enemy, I am absolutely at one with those in authority, but it seems a trifle absurd to hide from the British public at large what is already known to a limited extent to all Germany.

Furthermore, what is now known with absolute certainty to everyone in London must sooner or later be known to the military and naval authorities in Germany, for apparently every neutral subject in London spent several days last week chasing round the scenes of the raids. Several American friends of mine—happily our staunch allies—received the most courteous assistance from the police, who directed them with precision to the exact places where bombs fell. There does not seem any reason to suppose that unfriendly neutrals or hyphenated Americans at present in London, and shortly to be in Holland or Sweden or Switzerland, or even in Germany itself, would be any less courteously treated by our eminently polite and obliging constables.

That being so it would appear to anyone blessed with a moderate share of common sense that the proper thing to do would be to give to an anxious British public a general account of what did happen, carefully avoiding being too specific as to the localities damaged or as to the total amount of damage done, but being very specific indeed as to certain details of that damage. If some writers possessing the gift of description were permitted to tell some of the incidents of the various raids just as they happened, it would do much to stir up a proper feeling of anger among the populace against the enemy.

Between twenty and thirty people (vide official figures) cannot be killed without a certain number of minor tragedies occurring, and if some of those tragedies were told plainly and forcefully—not with the bathos of the half-penny journalist—they might bring home to the British workman—or the British shirkman, as some of him deserves to be called—the fact that the duration of the war and the lives of his former friends who are now on active service depend on the workman and his willingness to work his hardest for the welfare of the community.

Doubtless in many cases the workman has no desire to shorten the war, for he is drawing at least three times as much as he is worth and is spending it like a fool for the benefit of knavish shopkeepers. Has it struck my feminine readers that the prime reason for the present high price of food-stuffs is that workmen's wives are buying food of qualities and in quantities that they would never touch in time of peace, and that shopkeepers are rushing prices up to extract as much money as possible while this prodigality lasts. No one grudges the workman good food and plenty of it—so long as he really works—but at present his wife is merely paying first-grade prices for fourth-grade stuff. However, that is another story. Let us return to our Zeppelins.

WHAT THE GERMANS KNOW.

Being debarred from discussing the Zeppelin raids as one might if the official communiqués were properly framed for the welfare of the people who pay the officials' salaries—(vide Mr. Kipling's remark)—one may nevertheless deal with such phases of the subject as are already perfectly well known to the Germans, or are better known to the Germans than to us. For instance, the Germans know whether any of their Zeppelins were hit, or whether any of them were attacked by our aeroplanes.

Probably some millions of people in the vicinity of London had excellent views of the airships in the glare of the searchlights, and the fact that the ships were content to remain in that glare for so long showed something very like contempt for our anti-aircraft gunnery. Also, the crews of those ships are able to judge better than anyone on the ground how badly the guns missed them.

To the civilian eye they offered easy targets, and apparently a good many naval and military officers are of the same opinion, but, as I have said, the Germans know better than we do how bad or how good the shooting was. If it was as bad as the known results seem to show, then there is something very wrong with the Anti-Aircraft Corps.

It is something like three years since Colonel Seely, then the prime agent for aerial defence, told the House of Commons about the fine results achieved with anti-aircraft guns in experiments in the Isle of Wight. Officers and men in Flanders know what our "Archibalds" were like compared with those of the Germans at the beginning of the war, and the German aviators

know whether they are any better or more numerous now than they were then. One gathers that they are considerably better in their shooting, but they are obviously outnumbered by the German guns. It is therefore plain that someone deserves to be hanged for their insufficient number, even if their quality is as good as the enemy's.

Also, if our guns are as good, some minor prime agent is to blame for their failure to bring down enemy airships in this country. Such failure may be due either to lack of practice or to incompetent men being put on as gunners. In either case the fault lies at the door of the officer charged with organising the defence of English towns against hostile aircraft.

AN INTERPOLATION.

[POST SCRIPTUM, September 14th.—It may be of interest to note that these articles were written on Sunday last. On Tuesday it was announced that Sir Percy Scott has been appointed to look after the anti-aircraft guns. A note on the subject appears in its proper place among the Naval Notes. The appointment seems to indicate that official views agree with those expressed in this paper. Until such time as we are able to produce a super-Zeppelin the only defence against airships at night is shore guns and searchlight.

There is an old gunnery axiom which says that one gun in a fort is worth two afloat—which is true so long as the guns are of approximately equal efficiency. We found it so to a great extent in the Dardanelles, despite our superiority in calibre. There is no hope of airships ever carrying guns as big as those on the ground, and there is no hope of bomb-dropping ever being as accurate as gunnery, simply because the bomb has not the initial velocity of a shell, and is not let go from a perfectly stationary platform. Therefore guns of proper size and properly manned can always defend any one definite spot against airships of any considerable size—though they might miss small fast aeroplanes. But guns and searchlights are useless against promiscuous bomb-dropping through a fog, and guns cannot defend a whole country-side, and therefore the super-Zeppelins and the big fleets of aeroplanes are necessary.

The function of the super-Zeppelin is to drive off enemy airships and to carry on raids over the enemy's territory at night. The aeroplanes will do their work in daylight. The great thing is to acquire enough of all these weapons.—C. G. G.]

DOING NOTHING.

The attitude of the unenlightened public towards the authorities is distinctly amusing simply because of the ignorance it displays, and despite the fact that the populace is eminently justified in the anger it displays against those who are supposed to protect it.

The other night, during the bombardment, a young friend of mine, who is a special constable, was standing outside his station with sundry other "specials" awaiting orders, when a shrill voice from the crowd cried: "Just look at all them great 'ulking men a-standing doing nothing and never raising a 'and to stop it." Just what the unhappy "specials" could do is not very clear, but there are others in higher places who might have raised several hands to stop it some months or years ago—and they have had plenty of warning.

The public also seems to blame the Flying Services for not "stopping the war"—at any rate as regards British territory. Even that might have been done, if the "principals and prime agents" had moved in time. But, so far as the aeroplanes of the present day are concerned, airship hunting at night is simply futile.

HUNTING IN THE DARK.

If you want to acquire some idea of what it is like,

imagine yourself clad in your pyjamas, or "nighty" as the sex may be, and with bare feet, ordered to go into the Albert Hall, among all those chairs and benches, on a pitch black night to chase a black cat. Add to that the conditions that all the balustrades of the staircases and the parapets of the balconies have been removed, that the cat will naturally run upstairs when you get anywhere near it, and that your only method of locating it is by its purr when you stop moving and listen intently. If you can picture such a nightmare to yourself, you may estimate to some mild extent the danger and the utter futility of chasing airships at night with aeroplanes.

Remember, airships do not come in daylight or on bright moonlight nights, and now that the nights are lengthening there is no hope of catching them in the light of dawn before they can get home. Bearing this in mind, one may estimate the gross ingratitude of those people who blame the R.N.A.S. and R.F.C. for the disturbance of their nerves, entirely forgetting all the Zeppelins and other airships which have been destroyed at Düsseldorf, Friedrichshafen, Ghent, Brussels, and elsewhere on the Continent, by Service aviators who have dived through Hells of fire from really efficient anti-aircraft guns, just to prevent those airships from reaching England.

THE AMAZING RUMOUR.

Perhaps the most amazingly stupid rumour going about at present—and very annoying, at any rate, to those of us who have fought the political battles of the Flying Services, even if the aviators themselves can afford to laugh at it—is that the Government is convinced of the incompetence of our Flying Services and is arranging to bring over a number of the crack French pilots to patrol London at night as they patrol Paris.

Now the people really to blame for this disgusting exhibition of ingratitude are the daily newspapers which have blathered about the comic "Escadrille de Paris" and its constant patrols over the city, and have held up the pilots of that stay-at-home squadron as the heroes of France.

The truth is that the real anti-aircraft defence of Paris is its wonderfully organised double ring of searchlights and anti-aircraft guns—as the Germans very well know. It is fear of the phenomenal French artillery that keeps German airships away from Paris at night, and the only aircraft invasion Paris need bother about is an occasional raid in the daytime by a very daring aviator on a very fast machine.

The aeroplane patrol by day is useful for that reason, though as a rule any such attempted raid is stopped by the active-service aviators at the front long before it reaches the city, for, remember, to reach Paris a German aviator has to cross the fighting-line, then he has to cross all the reserve lines, and then he has to cross the outer defences of Paris before he ever reaches the "Escadrille de Paris." On the other hand, a German aeroplane can leave the Belgian coast and get to London practically unseen even in broad daylight, and the distance is not twice as great as if it went to Paris.

EYE-WASH.

So far as concerns the patrol of Paris at night by aeroplanes carrying headlights, this is pure "eye-wash," to please the populace. If a German wanted to get to Paris at night nothing would please him better than a patrol of illuminated aeroplanes, which would not only show him his goal ten or twenty miles before he reached it, but would actually indicate the exact position of each of its gallant defenders, so that he could dodge them with comfort. The headlights may help the pilots to land, but beyond showing the

Parisians that their imagined guardian angels are looking after them, that is all their use.

The only true defences at the present moment of any city at night against aircraft are searchlights and anti-aircraft guns, and plenty of each. But, because pre-

vention is better than cure, a still better defence both by day and night is the destruction of enemy aircraft before they start, and that is the work on which the R.N.A.S. has been engaged in Flanders for many months with considerable success.

ON MOVEMENTS AT THE ADMIRALTY.

Recent alterations at the Admiralty give one to hope that the principle of preventing raids by enemy airships by the simple process of destroying them before they start will be still further developed. The raising of the R.N.A.S. to the status of a flag officer's command indicates, at any rate, that what has been done so far has been sufficiently satisfactory to encourage further expansion. It will ever be to the credit of Commodore Sueter that he succeeded against heavy odds in doing so much with such inadequate support.

Except for Mr. Churchill, he received little encouragement in high places, and many senior naval officers were definitely opposed to aircraft of all kinds, with the result that even from the very beginning it was difficult to obtain for the Air Service officers of the best type who could impart the right tone to their juniors, or instil a proper spirit of discipline into their men. The old Navy regards the Air Service with extreme disfavour, chiefly on account of certain little eccentricities in the personal behaviour of some K.N.A.S. officers, and it is hoped that recent changes may hasten improvements in this direction.

I have not had the honour of meeting Admiral Vaughan-Lee, so I cannot write of him from personal knowledge. His Service record is a very fine one, and he is highly esteemed by those who have served with him, and therefore all who are interested accept his appointment as Director of Air Services with good will. There is much for him to do, and one hopes he may get it done as efficiently as may be. There is a good deal of weeding out needed in the Service, and there are many good men who have not yet come into their own. One hopes that the future expansion of the R.N.A.S. will find them in their right places.

AIRCRAFT CONSTRUCTION.

In his new office of Superintendent of Aircraft Construction, Commodore Sueter should find ample scope for his high ability. It should be possible for any really capable naval officer of suitable rank to reorganise the personnel of the Air Service, but special knowledge, such as can only be obtained by intimate practical experience, is necessary to evolve order out of the chaos into which the supply of matériel has fallen.

Hitherto Commodore Sueter's attention has been

divided over so many different departments that no one man could do justice to the details of each of them. Law, order, and discipline among the personnel; design, construction, and supply of matériel; strategy, tactics, and manoeuvres on active service; organisation, provision, and arrangement for home defence—these and many other things all came directly under his personal notice, and he was without the help of any capable senior officer to whom he could delegate any one section of his duties. Nothing but diffusion of energy could result.

Now that he can concentrate on the supply of aircraft one hopes to see things moving rapidly. Also, one hopes to see some people moving rapidly—out of the Service for choice in certain cases, so that they can do no more harm—and there are many others who need to be accelerated in their official movements quite considerably. The supply of aircraft could be doubled with ease, and much could be done towards this end by washing out a lot of the crazy experimental work on which time and money is being wasted at present.

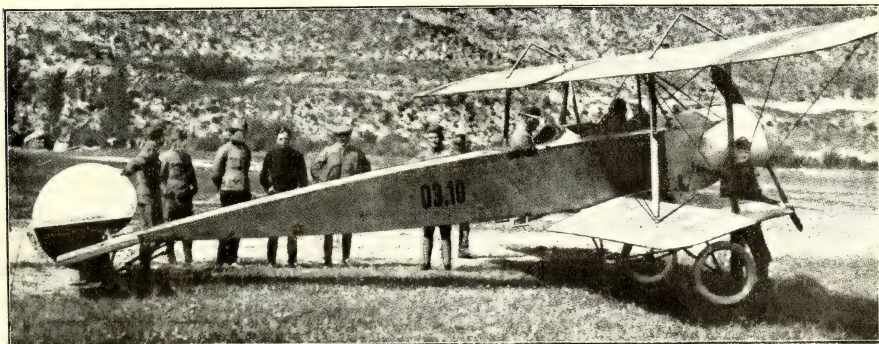
WHAT IS WANTED.

We want long-distance aeroplanes capable of bombing the German air stations, such as Cologne and Düsseldorf, and we want machines which fly and climb faster than anything in Germany. Given a free hand, the British aeroplane constructors can produce such machines, but they cannot do so if their time and shop-space is wasted on weird theoretical designs by Government employees, nor if their own designs are altered and re-altered by theorists who have practically no personal experience of flying or of construction.

Nor can manufacturers do themselves justice if their output is dependent on the whims of people who have the power to scrap their work without the knowledge of whether it should be scrapped or not.

The whole system of the supply of aircraft for the R.N.A.S. needs thorough reorganisation. That reorganisation has begun at the top by the appointment of Commodore Sueter as Superintendent of Aircraft Construction. I hope to see it spread till all the weeds are wiped out, down to the most insignificant and inefficient R.N.V.R. inspector.

There are not lacking those who will have it that



AMONG THE ENEMY.—Austrian officers with a Fokker Biplane in the Carpathian Mountains.

Commodore Sueter's promotion is similar to that of the Grand Duke Nicholas, and certainly the initials of his new office are singularly unfortunate, but personally I hope to see from the concentration of his immense energy onto this one subject results which will be very much to the advantage to the whole of the R.N.A.S., and equally to the discomfort of the inefficient who have done so much to delay development in the past year or so.

AIRSHIPS.

The naval correspondent of the "Morning Post" very rightly draws attention to the neglect of airships by the Government. It will be remembered that Commodore Sueter's first connection with aeronautics was during the early, and unfortunately discontinued, experiments with the "Mayfly" at Barrow. It is to be hoped that in his new office he will push forward the airship programme which was announced before the war.

Undoubtedly, apart from shore guns and searchlights, the only weapon possible against an airship at night is another and more powerfully armed airship; and, furthermore, if German airships can reach us at night, our airships can reach the homes of the German ships.

As the "Morning Post" says, apropos the foolish outcry against the bombardment of so-called undefended towns:—"We now perceive not only that aerial attack has become a part of warfare, but that neutrals contemplate it with indifference and continue

to treat Germany as though she was a civilised nation. In these circumstances the country, as usual, falls back upon the Royal Navy and its Air Service. What the Navy can do upon the sea it can do in the air, always provided that the sailor is left to do his work without amateur or diplomatic interference."

For "amateur" read "half-baked scientist," and for "diplomat" read "politician," and you have a very fair exposition of the case. The Navy can do its job if it is let. The task before the Navy is the building up of an air fleet bigger than the combined air fleets of any other two nations in the world, friendly or hostile. The "two-Power standard" is even more necessary to the British Empire in the air than ever it was on the sea, for this is the last war in which the Fleet at sea can protect the people of this country.

To Admiral Vaughan-Lee and to Commodore Sueter have been entrusted this great task. May their efforts be attended with success, and may they have the loyal and whole-hearted support not only of their own officers, but of all those concerned with the construction of aircraft.—C. G. G.

NOTE.

The happenings of the past week have occupied so much space that it is impossible to continue the notes on "Ornis" and the supply of aircraft as promised in the last issue of THE AEROPLANE. The subject follows naturally on the foregoing articles, and may therefore be a suitable theme for next week.

THE INVASIONS OF ENGLAND.

The Press Bureau issued the following note early on September 8th:—

Hostile aircraft again visited the Eastern Counties last night, and bombs were dropped.

It is known that there have been some fires and some casualties, but particulars are not yet available.

The number of casualties will be communicated to the Press as soon as they can be ascertained.

The following announcement was issued by the Press Bureau at 4 p.m. on September 8th, supplementing the previous communiqué:—

Three Zeppelins visited the Eastern Counties last night and dropped bombs. Anti-aircraft guns were in action. Aeroplanes went up, but were unable to locate the airships.

Fifteen small dwelling-houses were demolished or seriously damaged, and a large number of doors, windows, etc., were broken. Several fires were caused, but were promptly extinguished. There was no other serious damage.

The following casualties have been reported:—

	Men.	Women.	Children.	Tl.
Killed	2	3	5	10
Wounded (seriously)	4	11	5	20
Wounded (slightly)	9	5	9	23
Missing (believed to be buried in the débris)	1	2	0	3

Grand total

56

All the above are civilians except one soldier, reported seriously wounded.

* * *

The Press Bureau, at 1.10 a.m. on September 9th, issued the following note:—

Hostile aircraft visited the Eastern Counties and the London district last night and dropped incendiary and explosive bombs.

At midnight a few casualties had been reported, and some fires, which were then well under control.

The number of casualties will be communicated to the Press in the course of the day.

The Press Bureau issued the following on the afternoon of September 9th:—

Total casualties reported from all areas as the result of last night's attack by enemy aircraft are as follows:—

	Men.	Women.	Children.	Tl.
Killed	12	2	6	20
Injured (seriously)	8	4	2	14
Injured (slightly)	38	23	11	72

Grand total

106

All the above are civilians except four. Soldiers—1 killed, 3 injured.

* * *

The following was published by the Press Bureau on September 10th:—

Since the casualties caused by hostile aircraft on the night of Tuesday, the 7th, were published, the bodies of the three persons who were described as missing have been found, and four of the persons who were seriously injured have died.

The total number of deaths due to the attack on the 7th is, therefore, 17—5 men, 6 women, and 6 children.

* * *

The following official announcement was made on September 12th:—

A raid was attempted by Zeppelins last night on the East Coast.

Bombs were dropped, but there were no casualties and no damage was caused.

* * *

The Secretary of the Admiralty made the following announcement on September 13th:—

The East Coast was again visited by hostile aircraft last night (September 12th-13th).

Bombs were dropped, but there were no casualties, and the only damage reported is that some telegraph wires are down and some glass broken.

* * *

Several messages from Holland, received by Reuter, Central News, Exchange, and other agencies, report the sighting of airships, some of which were fired at by Dutch sentries, and may very well have been concerned in the raid of September 7th.

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Below are incidents :—

An airship was sighted at Tilburg and Breda, in Holland.

Peasants at Hertzogenbosch saw an airship with (they say) the German flag, but the military authorities doubt whether the airship was a Zeppelin or a French Zodiac. Dutch sentries fired at the airship, but missed it.

The Amsterdam "Handelsblad" received from several places news to the effect that a Zeppelin was observed yesterday morning proceeding from the east to the south-west. It was fired at by Dutch soldiers.

At 6.30 a.m. on the 7th a large airship appeared over Watergraafsmeer, a suburb of Amsterdam, travelling from the south-west and then turning east.

A correspondent in Dordrecht wired to Amsterdam about 6.30 a.m. on the 7th that three airships, the nationality of which could not be ascertained owing to the great height, were observed coming from an easterly direction. They disappeared towards the west.

The Amsterdam "Telegraaf" states that about 8 a.m. on the 7th an airship, probably a Zeppelin, flew over the village of Duivendrecht, near Amsterdam, going from north-east to south-west. Some of the fortresses around Amsterdam fired on the airship.

* * *

The "Times" special correspondent at Amsterdam reported on September 8th :—

"Lively concern has been caused in Holland to-day by reports from many parts of the country that airships have appeared above Netherlands territory. One was distinctly seen above Amsterdam at 6 o'clock this morning, and airships are also reported to have been seen at Aalsmeer, Weesp, Abcoude, Mijdrecht, Duivendrecht, Breda, and Tilburg. At Aalsmeer the crew of the airship, numbering about twenty, were seen wearing Prussian spiked helmets. [Which reminds one of the people who knew they were Russian troops passing through England in August last year because they saw the snow on their boots. Anyhow, the spikes showed they were not English Household Cavalry.—Ed.]

"At Hedel the German flag was distinctly visible, and the airship was fired at by sentries at Amstel and three other places.

"It is also reported that two airships were above Zwynendrecht and one above Dordrecht at 6.30 this morning, going west.

"Later reports state that two airships were seen at Dordrecht, one a small one.

"A Breda message reports that a Zeppelin was seen there at 7 this morning, flying rather low. One of the engines worked intermittently and very loudly, and one screw was apparently damaged. She proceeded in an easterly direction, crossing the Belgian frontier at Galder."

* * *

The following communiqué, issued in Berlin by the Chief of the Admiralty Staff on September 9th, gives the German version of the raid of Wednesday night :—

Our naval airships attacked during the night of September 8-9, with good results, the western part of the City of London, great factories near Norwich, and the harbour works and ironworks at Middlesbrough. Heavy explosions and numerous fires were observed. Our airships were heavily fired at by hostile batteries. All returned safely.

* * *

A report from Berlin, transmitted through German wireless stations, and received on September 9th by the Marconi Company, states :—

During the night before last and yesterday the docks as well as other port establishments of London and the vicinity were bombarded with explosive and incendiary bombs. The effect was very satisfactory. In spite of heavy shelling, our airships returned undamaged.

[Those who have friends on the East Coast may be glad to learn from Germany the approximate positions of the districts bombarded, as this information is denied them by a paternal (or should one say grand-maternal?) Government.—Ed.]

* * *

A Mr. B. F. Wyatt, whoever he may be, inflicted a couple of columns of hysteria on the readers of the "Globe" on September 13th, the main purport of his ravings being that a public meeting should be called to demand that the Government make reprisals on German property in this country. This Mr. Wyatt apparently forgets that there are some thousands of British subjects in Germany, and that they would suffer for any reprisals of that nature.

Mr. Wyatt also calls for retaliatory raids into German territory, such as a "raid from British and French aeroplanes on the streets of, say, Cologne." He seems to forget that the French are raiding German towns as hard as they can, and that all our available aeroplanes are worked for all they are worth. Can he—who seems to pose as an aeronautical "expert"—be so ignorant as to think that we should refrain from bombing German towns if we had any way of reaching them?

* * *

The following letter to the "Globe" is typical of the gross stupidity of people who demand the impossible :—

"The only remedy for Zeppelin raids is retaliation, and I think it is high time the people of this country insisted on stern measures being taken to protect our dear ones.

"Every time the Huns bombard an open town, or sink a defenceless liner, or drop bombs on crowded streets, we should send an air fleet in broad daylight over some German town or village and lay it flat, with every living soul in it if possible.—Yours, etc., A HUSBAND AND SON AND BROTHER."

[Why should our people be compelled to risk their lives by flying over Germany in broad daylight?—Ed.]

* * *

A message from Amsterdam on September 12th says that the German papers state that Count Zeppelin personally directed the recent attack on London. Some say that the Count only directed the expedition from the air base at Emden, but others declare that he flew towards England with the airships. [And presumably flew back alone without any?—Ed.]

* * *

The terror and the local tragedies which accompany Zeppelin raids are occasionally relieved by amusing incidents and the exhibition of humour evolved by business instinct. On the boarded-up shop front of a cheap tailor's business premises, the plate-glass window of which had been shattered by a neighbouring bomb, appeared the following inscription: "Business as usual! Give us an order instead of your sympathy!" An insurance agent's windows similarly shattered admonished the public to insure against future raids.

* * *

In another place a number of people assembled in the most substantial house available and "sat out" the bombardment in the drawing-room with the blinds lowered. Some thoughtful soul remembered old Mrs. Smith who lived near by, who was very old, decrepit and deaf. She could not be made to understand what the trouble was, but she obediently dressed and joined the others. Mrs. Jones, the hostess, discovered some peppermints in her pocket and passed them round—twice.

By the time these were consumed the bombardment had ceased, and everyone went home thrilled, all but dear old Mrs. Smith, who went calmly off to sleep. Next day, to the astonishment of her neighbours, she paid a round of calls with her biggest ear-trumpet, trying to find out what had possessed Mrs. Jones to invite her friends to see her at

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midnight, and then to entertain them with nothing stronger than peppermints!

The "Financial Times" of September 13th gives the following as an echo of the air raid:—

Scene: Night in the Eastern Counties. A Zeppelin, brilliantly illuminated by search lights and festooned with shrill, is observed approaching. A National Guard (with gun) enters O.P. followed by his wife.

National Guard, sighting for the Zep.: "I really believe I could pot the beggar."

His Wife (alarmed): "Oh, Charles, please don't irritate it."

The "Morning Post" of September 14th says:—

"The commander of the German dirigible which visited the outlying districts of London last week left an interesting memento of his visit in the shape of a large bone, apparently the blade bone of an ox or a horse, on which were several sketches and diagrams. It was attached to a parachute, and on the flat, wide end was a sketch of a man intended to represent Sir Edward Grey, and above was a design of a Zeppelin with a bomb dropping from it on to the head of the Foreign Minister. At the narrow end of the bone was a representation of the German flag with streamers flowing from it, bearing the words: 'A present to Sir Edward Grey, with the compliments of the commander and officers at —'." The relic came safely to earth in a large, open space, and ultimately was taken possession of by the authorities."

This may be the original of the wild rumour floating about to the effect that the body of a German from one of the raiding airships was found in a garden in London. Opinions as to how the body got there are varied. They are:—(1) That the man was pitched overboard on purpose when a shell nearly hit her, so as to lighten the ship and make her rise quickly; (2) that he was sea-sick and fell overboard in a paroxysm; (3) that he was throwing a bomb with such violence that he lost his balance and fell over after it, and (4) that he was dropping a heavy bomb which was sticky, and he could not let go when he wanted to do so.—An R.N.A.S. officer is responsible for the last delightful theory, but all are highly ingenious. Just why Germans should throw bombs overboard when proper dropping-gear is so much neater and less trouble, is not explained.

The "Globe" of September 14th continues its shriek for a mass-meeting to demand the reprisals which everyone in the Flying Services is only too anxious to execute if circumstances permitted. One notes with interest that the first subscriber to the expenses of the meeting is a member of the Jay family.

A reader of the same paper demands to know whether we are to take these raids lying down.—Perhaps it is the handiest position in which to get a good view.

An official statement issued late on September 13th says:

A hostile aeroplane visited the Kentish Coast this afternoon, and dropped some bombs which resulted in one house being seriously damaged and four persons being injured.

She was chased off by two Naval aeroplanes.

THE AERO CLUB'S EXTENSION.

The notice recently issued concerning the extension of hours at the Royal Aero Club may have left some members doubtful as to whether the notice referred only to the days when the Club was usually open till the hour of 7.30. It should, therefore, be noted that the Club will be open till 10.30 every day of the week including Sundays.

HELP!

[A reader of THE AEROPLANE, to whom a brochure, entitled "How to Act in Case of Zeppelin Raids," was presented by an anxious relative living in the Provinces, turned to it for advice the other evening, and this is what he found:—

"BEE OR WASP STING.—Extract sting by pressure of watch key or by applying raw onion.

"CHOKING.—If fishbone in the throat eat dry bread."

Seized with the idea that he could at least do as well as a giver of advice, he offers the following.—Ed.]

The hints quoted, and those from which they are selected, although of the utmost value, do not appear to be sufficiently comprehensive to meet quite all the emergencies which might arise. The following additions may, therefore, perhaps come in handy in future.—W. R.

FALSE TEETH.—If your false teeth will not keep in place because your jaws are chattering—owing to the night cold, of course—do not attempt oxy-acetylene welding, prop them up with a bath bun.

BIRDS.—If your canary stops singing from fright, do not hit it, as it does not mean to annoy you. Wait till it starts again. If you have any other birds in the house, take them down to the cellar with you.

CONGESTION.—If your mother-in-law and the fat cook get jammed in the gangway racing down to the cellar, do not shove the cook with one of your pedal extremities. Class distinction at such a time would be snobbish and invidious. Instead, run upstairs for your shoehorn, and all will end pleasantly.

SLEEPING.—If the shock of the first crash makes your daughter sing a note in tune by mistake, do not be alarmed or show your surprise. There is no danger of it occurring again. If, however, the sudden noise makes your face slip, act promptly and with decision. Run downstairs for your largest howitzer (16 inch, if possible), and fire a volley or two. The reaction should push your face back again. Also, if you are insured, you may make quite a good thing out of this.

CORRECT BEHAVIOUR DURING AND AFTER RAID.—Do not forget that, no matter what part you live in of, say, London, the Zeppelins always come straight over your house.

If you happen to be talking to someone who *knows* that they did not go anywhere near you, then remember that they flew over the residence of your brother (or sister, as the case may be).

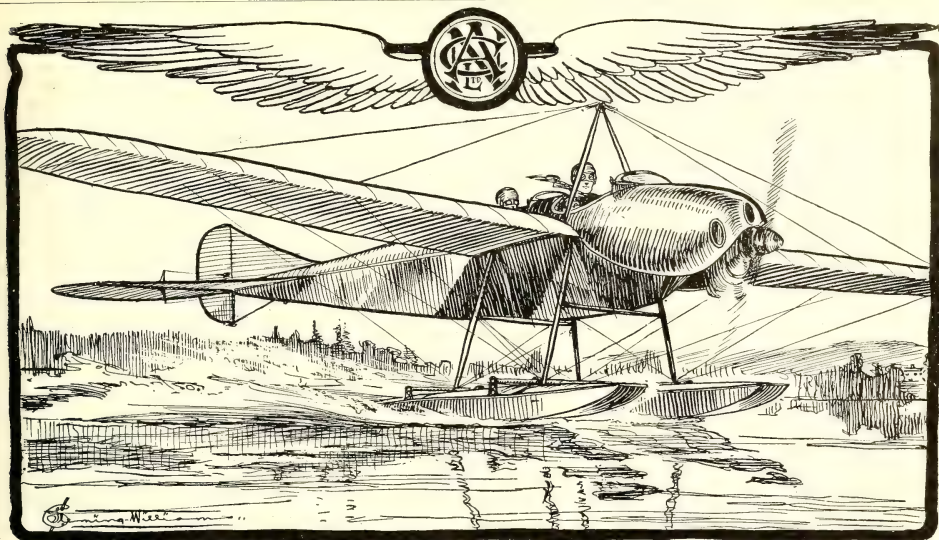
Also, do not forget that a house a few doors away from you was damaged. (Special note to beginners: alter the side of the road and direction of the house in relation to your own for each raid!)

Remember that you have special inside knowledge that at least one Zeppelin was brought down. The reason why this has not been announced by the Admiralty is in order to deceive the Germans into thinking that it has lost its way. They will then, you explain, send more Zeppelins out to look for it, which will in turn be destroyed.

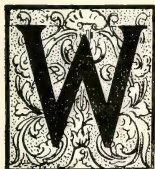
The most impressive method of insinuating your own exceptional bravery is to imply it subtly rather than to speak openly of it. For instance, just mention casually that the bath is quite spoilt by the bomb you extinguished in it. It looks well to get the hair which you wear with this remark well singed.

When supervising cellar-drill with your best attempt at a light, careless smile, do not bully your comrades. Otherwise they may not agree that you only hurried down to the cellar before anyone else because you suddenly remembered that some of your best "wine" was standing the wrong way up.—W. R.

*If your guests require material evidence of your sudden acquisition of "wine," buy a sample bottle of Smith's Temperance Cooking Sherry. A bishop writes: "Thanks for your sample. It certainly looks like sherry, it certainly smells like sherry, but it certainly does not taste like sherry."—(Advert.)



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From the "London Gazette," September 7th.

WAR OFFICE, September 7th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. to be lieuts. August 1st: F. W. H. Lerwill, A. M. Wynne, A. B. Rendall, F. H. Jenkins, F. S. Barnwell, H. P. S. Clogstoun, A. M. Morison, M. E. Lane, F. W. Goodden, R. H. Mayo, H. R. Nicholl, O. D. Filley, S. W. Caws, R. H. S. Mealing, H. L. Cooper, C. J. Chabot, C. H. Pixon, G. L. P. Henderson, E. R. Scholfield, C. Barber, R. G. Gould, S. A. Hebden, O. Greig.

To be sec. lieuts. (on prob.): E. F. Driver, late temp. sec. lieut., South African Aviation Corps. July 31st. G. Somers-Clarke. August 3rd.

MEMORANDUM.—To be temp. Sec. Lieut.—Stanley T. Welch, from Sec. Lieut., Royal Flying Corps, Special Reserve; September 8th, 1915.

* * *

From the "London Gazette" Supplement, September 8th.

WAR OFFICE, September 8th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) K. D. P. Murray is confirmed in rank; B. J. Moore to be Sec. Lieut. (on prob.), (August 23rd).

* * *

From the "London Gazette" Supplement, September 9th.

WAR OFFICE, September 9th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—To be flying officers.—August 13th: Sec. Lieut. J. H. Herring, S.R.; Sec. Lieut. C. D. Danby, Tyne R.E., T.F.; Temp. Sec. Lieut. H. G. Dean, York and Lanc., and to transfer to Gen. List.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): D. Easdale. August 23rd. B. May. August 30th.

* * *

From the "London Gazette," September 10th.

ADMIRALTY, September 7th.

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut.: R. S. Smith. April 7th. E. W. Norton. May 25th. Proby. flight sub-lieuts. for temp. serv. confirmed in rank of flight sub-lieut. for temp. service: G. R. H. Talbot. May 2nd. C. C. Wyllie. May 17th. J. A. G. Swaine. July 3rd. F. R. Sudd. July 15th. E. B. Cowell. July 23rd. R. C. M. Smith. August 6th.

* * *

WAR OFFICE, September 10th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sqdn. Com.—Capt. Hon. J. D. Boyle, Rifle Brig., from wing adjt., and to be temp. maj. whilst so employed. August 3rd.

Ass. Eqmnt. Officers.—Sec. Lieut. C. Defries, S.R. June 22nd. August 10th: Sec. Lieut. F. W. Wright, S.R.; Sec. Lieut. J. E. Marriott, S.R. Sec. Lieut. W. N. M. Dunkley, S.R. August 31st. Rank of Lieut. H. F. T. Blowey, R.A., as now described, not as in "Gazette" of August 17th.

MEMORANDUM.—To be temp. lieuts., for duty with Royal Flying Corps. July 31st: Lieut. W. W. Carey-Thomas, South African Defence F., Lieut. J. Clisdal, South African Mtd. Rifles.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: J. P. C. Cooper, C. C. Godwin. To be sec. lieuts. (on prob.): E. H. Pullinger. August 5th. August 6th: A. B. Adams, H.

Tomlinson. F. G. Hogarth. August 19th. August 23rd: G. G. Samuel, S. E. Cowan.

* * *

From the "London Gazette" Supplement, September 11th.

WAR OFFICE, September 11th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—August 18th: Sec. Lieut. K. D. P. Murray, S.R.; Sec. Lieut. A. L. Neale, Lincs., and seconded; Sec. Lieut. C. C. Godwin, S.R. August 24th: Sec. Lieut. D. A. Hansard, S.R.; Sec. Lieut. K. K. Horn, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: J. P. C. Sewell, B. C. McEwen, E. A. B. Rice. To be sec. lieuts. (on prob.): August 22nd: F. W. Brett, A. Lang.

* * *

From the "London Gazette" Supplement, September 12th.

In a supplement to the "London Gazette" issued on September 12th appears a further list of honours for gallantry and distinguished service.

The King has been graciously pleased to give orders for the appointment of the following officer to the Distinguished Service Order in recognition of the services mentioned:—

DISTINGUISHED SERVICE ORDER.

Squadron-Commander ARTHUR WELLESLEY BIGSWORTH, R.N.

For his services in destroying single-handed a German submarine on the morning of August 26th, 1915, by bombs dropped from an aeroplane. Squadron-Commander Bigsworth was under heavy fire from the shore batteries and from the submarine whilst manœuvring for position. Nevertheless, displaying great coolness, he descended to 500 feet, and after several attempts was able to get a good line for dropping the bombs with full effect.

DISTINGUISHED SERVICE CROSS.

The King has further been graciously pleased to give orders for the award of the Distinguished Service Cross to the following officers:—

Monsieur le Lieutenant de vaisseau HENRI JULIEN PAUL DE L'ESCAILLE, de la Marine française.

For his services in command of the French Seaplane Squadron in Egypt. During the earlier part of this year, when hostile patrols were in touch with the Allied forces holding the Suez Canal, Lieutenant de vaisseau de l'Escaille, as pilot, made some brilliant and daring reconnaissances over long stretches of the Sinai Peninsula, where engine failure meant certain destruction to plane and to pilot. On these occasions, although under fire, by his skill and courage, he never failed to secure valuable information as to the enemy's movements.

Monsieur le Lieutenant de vaisseau ALFRED LOUIS MARIE CINTRÉ, de la Marine française.

For his services as a seaplane pilot in Egypt. He displayed great skill and intrepidity in a reconnaissance over Bir Saba on April 11th, 1915, when his plane was subjected to a heavy shrapnel and musketry fire, and was hit in more than one place. With consummate coolness Lieutenant de vaisseau Cintré circled over Bir Saba again and again, until the number and position of the enemy were observed. He then turned his plane towards the ship, and, though the engine was damaged, succeeded by very skilful handling to traversing the distance of thirty-five miles to the coast-line in safety.

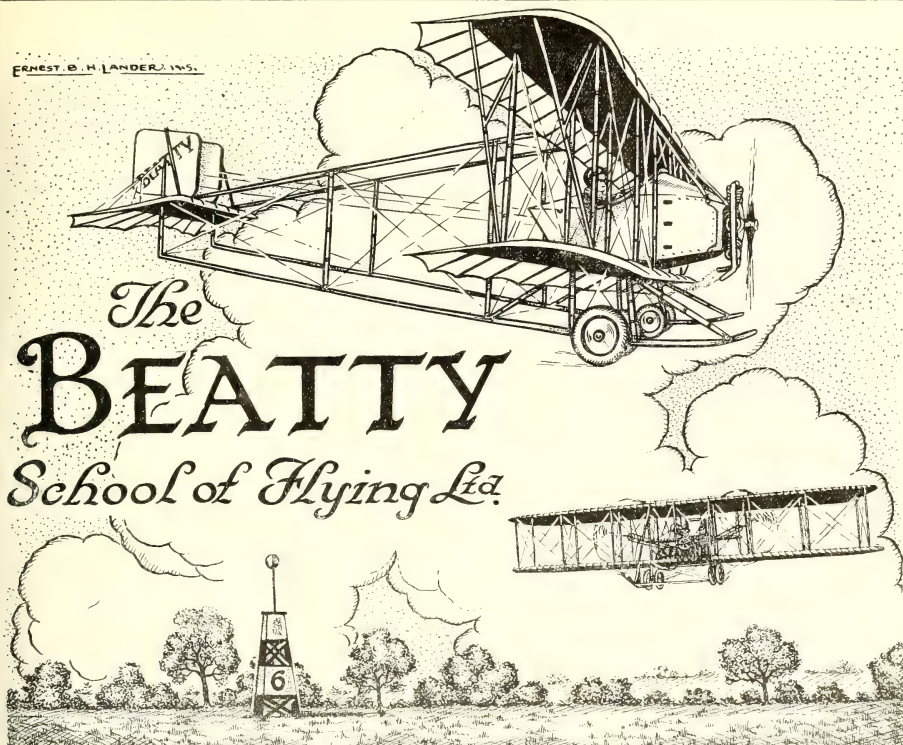
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From the "London Gazette" Supplement, September 13th, 1915.

WAR OFFICE, September 13th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY

ERNEST G. H. LANDER, IWS.



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WING.—Sec. Lieuts. (on prob.) confirmed in rank : K. K. Horn, G. G. Hubbard, D. A. Hansard.

To be Sec. Lieuts. (on prob.) : J. L. Chalmers, August 16th. F. C. A. Wright, August 25th. August 29th : E. Taylor, W. Hart, K. P. MacNamara, B. W. Watts, C. Fergusson, F. Shumaker, E. Powell, A. Heywood.

NAVAL.

The following appointments were notified at the Admiralty on September 7th :—

ROYAL NAVAL AIR SERVICE.—Flight Com. H. Delacombe granted the acting rank of squadron com., to date September 4th.

Flight Lieut. G. C. Colmore granted the acting rank of flight com., to date September 4th.

The following have been entered as probationary flight sub-lieutenants for temporary service and appointed to the "President," additional, for R.N.A.S., to date as stated : C. Murray and K. V. Hooper, September 12th ; C. W. Jamieson, T. C. Angus, and W. M. Tait, September 11th ; H. C. Gallen and P. O. Mechanic A. B. Spencer, to date September 5th.

Temp. Sub-Lieut., R.N.V.R., G. E. Nathan promoted temporary lieutenant, R.N.V.R., to date September 4th.

Mr. H. French granted a temporary commission as sub-lieutenant, R.N.V.R., and appointed to the "President," additional, to date September.

* * *

The following appointments were notified at the Admiralty on September 8th :—

ROYAL NAVAL AIR SERVICE.—Temporary Warrant Telegraphist (R.N.R.).—J. C. Mitchell, entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of September 6th, and appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on September 9th :—

ROYAL NAVAL AIR SERVICE.—Temp. Flight Sub-Lieut.—The Hon. A. S. Byng, granted the acting rank of Temp. Flight Lieut., with seniority of August 9th.

Temp. Sub-Lieut. (R.N.V.R.).—J. H. Lee, promoted to

the rank of Temp. Lieut. (R.N.V.R.), with seniority of September 7th

J. A. Nash and W. H. Hope have been entered as Proby. Flight Sub-Lieuts. for temp. service, with seniority of September 7th, and appointed to "President," additional.

Temp. commissions have been granted as follows :—Lieut. (R.N.V.R.).—H. B. Pratt, with seniority of September 7th, and appointed to "President," additional.

Sub-Lieuts. (R.N.V.R.).—B. N. Wallis, A. Scarrisbrick, F. Smythe, and H. C. Mallett, with seniority of September 7th, and E. H. Bellew, with seniority of September 8th, and all appointed to "President," additional.

* * *

The following appointments were notified at the Admiralty on September 10th :—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieuts.—S. T. Panther and F. E. Rogers, promoted to temp. lieuts., R.N.V.R., with seniority September 8th.

* * *

The following appointments were notified at the Admiralty on September 11th :—

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. for temp. service and appointed to the "President," to date as stated : G. H. Porter, September 18th ; and A. T. Sketchley, September 19th.

Warrant Officer, 2nd Grade (temporary).—C. J. Pyke, with seniority of September 10th, and appointed to "President."

* * *

The following appointments were notified at the Admiralty on September 13th :—

ROYAL NAVAL AIR SERVICE.—To be probationary Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, to date as stated : A. L. Greer, September 17th ; W. B. Evans, August 7th ; and F. S. McGill, July 23rd.

* * *

The Secretary of the Admiralty issued the following communication on September 8th :—

The rapid expansion of the Royal Naval Air Service, both in respect of *personnel* and *matériel*, has rendered



Part of Toronto from above. Taken by Mr. Sam Pierce from a Curtiss flying boat at the Canadian School.

FIRTH'S AIRCRAFT STEELS

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LEADING AEROPLANE AND ENGINE BUILDERS.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

necessary a reorganisation of the Admiralty Air Department, and their Lordships have decided to place it for the future under the direction of a Flag officer, with the title of Director of Air Services. Rear-Admiral C. L. Vaughan-Lee has been selected for this appointment.

The present Director of the Air Department, Commodore M. F. Sueter, C.B., has been promoted to the rank of Commodore, 1st Class, and will be in charge of the *matériel* side of naval aeronautical work, with the new title of Superintendent of Aircraft Construction.

[A note on the new arrangement appears in the leading article this week.—Ed.]

* * *

Rear-Admiral Vaughan-Lee, who was born in 1867, has had a distinguished career in the Navy. As a midshipman on the "Minotaur" during the Egyptian war in 1882 he gained the Egyptian medal and the Khedive's bronze star. On his promotion to lieutenant, with "five firsts," he specialised in torpedo work, and he steadily rose to be Assistant Director of Naval Ordnance, and later Assistant Director of Naval Intelligence. His appointment to flag rank only dates back to last month.

* * *

The Secretary of the Admiralty made the following announcement on September 13th:—

Admiral Sir Percy M. Scott, Bart., K.C.B., K.C.V.O., L.L.D., has been appointed to take charge of the gunnery defences of London against attack by enemy aircraft.

[The appointment is certainly a step in the right direction. Sir Percy Scott has, undoubtedly, done much in the past to improve naval gunnery. He first attracted public notice at the time of the Boer War, when, as Captain of the "Terrible," off Durban, he landed a number of 4.7 guns, equipped with land carriages, designed by the Naval Engineer officers of his ship, and sent them to Ladysmith, where they enabled the garrison to reply in some part to the Boers' Creusots. One gathers that these same guns, on their original mountings, have been used by the Royal Garrison Artillery in Flanders with effect.

After this episode, Sir Percy was considerably in the limelight at various times, notably on the occasion of his little argument with Lord Charles Beresford as to whether gunnery or "spit and polish" was the more important on a warship. Nevertheless, he did actually raise the standard of shooting in the Navy to a very high level, as Director of Gunnery Practice.

If he is so fortunate as to find assistants in his new work as able as those who have helped him to win his reputation in the past, we may look for very marked improvement in the defence of London against aircraft.—Ed.]

* * *

The Secretary of the Admiralty announced the following casualties on September 12th:—

EXPEDITIONARY FORCE.

Injured. Reported September 4th:—

Flight Com. James W. O. Dalgleish, R.N.

Lieut. Ronald B. Hay, R.N.V.R.

Mid. David Don, R.N.

[From the fact that all were "injured" on the one day it seems that all three officers were mixed up in the same accident, though its nature is not made known.—Ed.]

* * *

The following appeared in the obituary columns on September 14th:—

KEITH-JOHNSTON.—Killed at Ostende, on August 10th, 1915, in action against German aircraft, David Keith-Johnston, Flight-Lieutenant Royal Naval Air Service, eldest son of Mr. and Mrs. R. Keith-Johnston, of Bushey Heath, Herts.

KEITH-JOHNSTON.—Killed at Eastchurch, on September 12th, 1915, in an aeroplane accident, Macfie Keith-Johnston, Probationary Flight Sub-Lieutenant,

Royal Naval Air Service, youngest son of Mr. and Mrs. R. Keith-Johnston, of Bushey Heath, Herts.

Flight-Lieut. David Keith-Johnston was logged as "missing" some weeks ago, but this is the first public notice of his death. It would appear that he was killed in an aerial fight.

Flight Sub-Lieut. Macfie Keith-Johnston was killed in a collision with another machine at a height of several hundreds of feet. It is stated that the wing-tips of the two machines met, and one of them collapsed at once. The other apparently made some attempt to get down with a broken extension, but caught fire at about 200 feet and fell. Both pilots were killed on the spot. The name of the pilot of the latter machine is not yet announced.

* * *

The appointment of Squadron Commander Bigsworth to the Distinguished Service Order will be heartily welcomed by all who know the inwardness of the R.N.A.S. Even if he had never seen that submarine he thoroughly deserved the distinction for the valuable work he has done in Flanders for months past, and for his good service in command at Calshot and previously as second in command. A steady and capable flier, and a real naval officer of a highly estimable type, it is eminently satisfactory to see his good work recognised.

* * *

The following interesting note appeared in the "Star": Signaller Laker, an Eastbourne man in the R.N.V.R., tells of an exciting episode which took place off the Ruffi River, German East Africa, and in which he played a principal part. Laker is home on ten days' leave after being afloat for over 12 months.

"One day," he said, "we noticed from the ship an aeroplane on the beach, and as it could not be reached by the motor-boat I volunteered to swim to it and fasten a rope to it so that it could be towed in. I wore only a straw hat to shield me from the sun, and I had a pistol round my neck. After I had tied the rope to the machine I went on the beach to look for the missing pilot. Then there was a hurricane of bullets from some trees nearly sixty yards away, and I ran for my life back to the aeroplane. I pushed it off and got under one of the wings.

"The bullets were coming all round, and I had to keep practically under water all the time the motor-boat towed us in. I was gradually losing my senses, when fortunately one of the men in the motor-boat realised it. The boat stopped, and I was dragged in and soon came round.

"In the aeroplane were found 61 bullets and two pom-poms, and there were eight in the motor-boat. How I escaped being wounded I don't know. The pilot of the aeroplane, I think, had been taken prisoner."

[This confirms a letter from an officer which was reproduced in this paper many months ago, concerning the first attack on the "Königsberg." It is curious that no mention was made of any British aviator being missing at the time, and so far as one can gather only one aviator was available in that part of the world just then.—Ed.]

MILITARY.

The message from Field-Marshal Sir John French received by the War Office on September 9th contained the following:—

(2) A German aeroplane was brought down by rifle and machine-gun fire on September 1st, falling close behind the German lines south-east of Hooge. A second German aeroplane on September 5th was brought down by one of our fighting machines and fell behind the enemy's lines opposite the southern portion of our front.

* * *

The following appeared in the casualty list published on September 7th:—

Previously officially reported Missing, now unofficially reported Prisoner of War.

Drury, Sec. Lieut. D. D., Intelligence Corps, attached Royal Flying Corps.

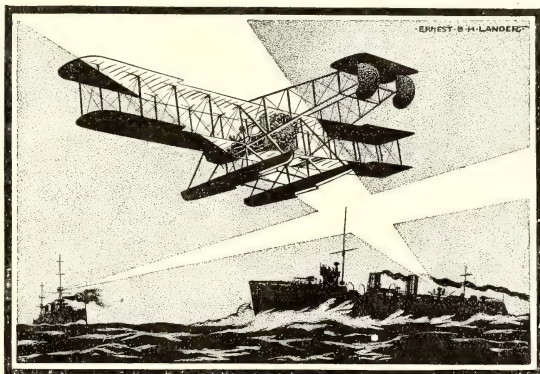
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CORRECTION.

Previously officially reported Missing, now unofficially reported Killed.

Pike, Capt. J. M., Royal Flying Corps, should read :
Pike, Capt. R. M., Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on September 8th under date September 2nd :—

DIED OF WOUNDS.

Liddell, Capt. J. A., V.C., 3rd Argyll and Sutherland Highlanders, att'd. Royal Flying Corps.

MISSING.

Scholefield, Sec. Lieut. E. R. C., Royal Flying Corps.
Wilson, Capt. F. J. C., 6th Cameronians (Scottish Rifles) (T.F.), att'd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were published on September 13th under date September 5th :—

WOUNDED.

Ridley, Lieut. C. A., Royal Fusiliers, attached Royal Flying Corps.

MISSING.

Adamson, Capt. W. C., Royal Flying Corps.

* * *

The casualty list published on September 14th contains the following, undated :—

INDIAN FORCES.

France.

Missing : Braddyll, Lieut. E. C., 10th Lancers, att'd. Flying Corps.

* * *

The following appeared in the "Times" on September 9th :—

CAPTAIN W. CAMPBELL ADAMSON, No. 6 Squadron, Royal Flying Corps, reported missing September 5th, France. Any Information concerning him will be gratefully received by his wife, Mrs. W. Campbell Adamson, Highfield, Trowbridge.

[This, it will be noted, was four days before the official notice appeared in print.—Ed.]

* * *

The following appeared in the "Times" on September 13th, so presumably later news has been received by Capt. Adamson's parents :—

ADAMSON.—Killed in action against German aircraft on 5th September, William Campbell Adamson, Captain Royal Flying Corps, only son of Mr. and Mrs. Shaw Adamson, of Careston, Forfarshire, aged 28 years.

Mr. Dunn, of Brechin, who knew him well, writes :—
"Heir to a large estate, 'Billy'—as he was universally known locally—was quite modest and unassuming. Like his father and mother, he had a large-hearted and warm sympathy with rich and poor, and was ever ready to go out of his way to help the lame dog if it was in his power.

"Always cheerful, he has been feeling the strain of duty lately. Twice at least before he has been shot down by the Germans, but managed to reach our lines. Shortly before his death his engine failed over the enemy lines and he just got home again, with his machine like a riddle. Next day, on a scout, his engine again went wrong, and he fell in a heap, but got off with a 'few bumps,' as he modestly put it.

"Now, alas, just when he was due for a spell of home duty, he has fallen, and a braver or more modest officer is not left to face the German music. To me the loss is almost as bad as my own boy's death."

* * *

It was reported on September 8th that Lieutenant G. Hobbs, Royal Flying Corps, was killed early on September 7th while flying at Martin Mill, near Dover.

It appears that Mr. Hobbs was flying a Martinsyde scout which had been flown the previous evening and was then in perfect order. Local evidence says that he was seen coming down first of all "turning over and over" and then flying "round and round," and disappeared behind some trees in that way. From this it seems probable that he got the machine into a spin—as Mr. Hawker did on the occasion of his wonderful escape on the Sopwith tabloid at Brooklands—after looping the loop, and failed to put its nose down enough to give it proper control speed. Or, of course, a control may have jambed and prevented him from straightening the machine out.

Geoffrey Brian Hobbs, 10th Northumberland Fusiliers and R.F.C., was aged 19 years. He was the second son of Mr. and Mrs. Herbert Hobbs, of Riding Mill, Northumberland.

The funeral took place on September 9th with military honours at St. Margaret's Bay. The body was borne to the church on a Royal Naval Air Service car, and the Brigadier-General commanding at Dover and officers from the Royal Flying Corps and Royal Naval Air Service were present.

* * *

The adjourned inquest on the body of Private Harry Gideon Jenkins, of the Royal Flying Corps, who was killed by an unknown taxi-cab at Hyde Park Corner, was held at Westminster on September 13th. The inquiry had been adjourned in the hope that the driver of the vehicle would come forward. The Coroner said the driver, who must have known of the accident, had not seen fit to come forward, and simply carried for all time in his breast the secret as to his own conduct on that occasion. He did not envy the man. The jury found a verdict of manslaughter against the unknown driver of the motor vehicle.

[One hopes that this may be a warning to some drivers of service cars and lorries belonging to the Flying Services.—Ed.]

* * *

The "Morning Post" of September 9th says of 2nd Lt. W. M. Wallace, Rifle Brigade, att'd. Royal Flying Corps : "He was one of the finest players outside the scrummage that Edinburgh Academy ever gave to the Rugby game. Lieut. John Greenwood gave Wallace his Blue in the great Cambridge Fifteen of 1912, and Barry Cumberlege continued him in the side of the last University match played at Queen's Club. Wallace thus had the distinction of being in the two Cambridge Fifteens that broke down Oxford's long series of successes. The Scottish Union quickly recognised the skill of Wallace—Edinburgh never errs in its Rugby judgment—and so Wallace was played against England in 1913 and in all three Scottish matches in the last Rugby Season before the war. Wallace looked frail physically; but he had pace, and those who came into contact with him knew that he could tackle."

* * *

The "Daily Telegraph" says :—

"Mr. Bannister Fletcher has just heard that his brother and partner, Major H. Phillips Fletcher, of the Middlesex Hussars, has been awarded the 'Croix de Guerre,' upon the recommendation of Admiral Lartige Fournet, of the French Mediterranean Squadron. His name has also appeared in the 'Ordres du jour,' which corresponds to our 'mention in despatches.' Major Fletcher has been specially lent to the Aviation Maritime, as military observer, and for the last four months has been making aerial reconnaissances from the coast of Turkish positions and dropping bombs on munition factories in Asia Minor, Syria, and Arabia."

[One is a trifle doubtful whether this piece of information should come under the heading of British Military, French Naval, Turkey, or "At Sea." It presents rather an interesting editorial puzzle.—Ed.]

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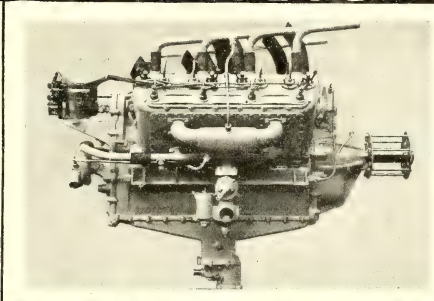
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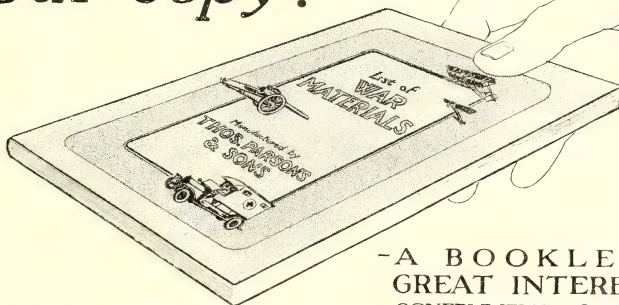


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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

One learns with regret that after every effort being made to save the limb, Captain Bonham-Carter, who was wounded in the thigh early in the war, has been compelled to have his leg amputated. He did excellent service throughout the early phases of the campaign, was awarded the French Legion of Honour, and was mentioned in despatches.

There is some satisfaction in knowing that since the amputation he has made highly satisfactory progress, and it is hoped that before long he may be fit for some post in the R.F.C., where his ability and experience may be utilised, even if he cannot act as a pilot.

* * *

One of the most extraordinary series of accidents on record occurred recently at one of the military aerodromes. A tractor biplane was standing with the engine running, when an air mechanic crossing in front of it tripped over one of the skids and fell into the propeller, which broke one of his arms and a leg. One blade flew clean off the propeller and hit another mechanic standing near by, breaking one of his arms also. The two men were taken off to hospital, and, after they had left, the officer pilot of the machine walked round to the front of it and gently turned the engine over by the remaining blade of the propeller to see if any damage had been done inside. Unfortunately he had forgotten to switch off after the accident, so the engine started up again and the blade smashed the officer's arm too.

Then the engine ran *amok* with its unbalanced propeller blade, tore itself out of its seating, jerked the machine over onto its side, smashed the wings, and finished by burying itself in the wreck.

With all sympathy for the victims of the accident, one cannot refrain from remarking that the engine—from its own point of view, which was evidently pro-German—had rather a good day.

* * *

The wholly imaginative story of the Zeppelin pilot who bombarded Constantinople under the impression that it was the White City at Shepherd's Bush reminds a reader of a more or less true story of the R.F.C.

Some time ago a military aviator was flying from X—, in the South of England, to Y—, in France. By some mischance, when he reached the corner of England where the coast takes a turn to the North, he formed his own opinion of his direction, which differed from that of his compass, and as he was skipper of the ship it was naturally so much the worse for the compass.

After flying somewhat farther he reached a place where there was no land in front of him and boldly flew forth across the water. In the usual twenty minutes or so he was once more over land, and though it did not agree with his map, he knew that if he flew far enough he would see signs of war, and that then he would be directed to Headquarters. Presently he saw tents, but no dust of gun-fire or smoke of burning towns, and, concluding that it must be an off-day at the war, he decided to come down.

There was no good ground near the tents, so he landed in the largest field he could see, and when some peasants arrived he opened on them with his best French, demanding the whereabouts of the "*Tête-quartiers Anglais*." The peasants replied in some unknown dialect reminding him distantly of Dutch, so he concluded that he had landed in a Flemish-speaking district. He made several more efforts in French, which seemed to make the peasants suspicious, for they closed round him, and some of the younger ones ran off in the direction of the tents.

After a while a number of soldiers arrived at the double, with fixed bayonets. Delighted to see British troops, he hailed them with, "I say, can you tell me how far I am from Calais? I can't make these folks understand my French." "French!" said the N.C.O. in command, "Not bloomin' likely. Why you're about two miles from Z—," naming a town in the Eastern Counties, "and

these chaps come and fetched us cos they thought you was a German. Lucky they did, 'stead of 'ittin' you on the 'ead with a 'oe. French! Gawd!'" and he collapsed. You must forgive the N.C.O., because the pilot's leather coat had no rank badges.

It appears that the pilot had gallantly flown the Thames at its widest part and had landed in a district where the dialect is not precisely that of Mayfair.

The moral is,—When in doubt don't contradict your compass. It probably knows its job quite as well as any six-week aviator knows his.

FRANCE.

The afternoon communiqué of September 7th says:—

German aeroplanes flew yesterday morning over Gerardmer and dropped some bombs. The first raid was without result; the second resulted in the death of two people.

* * *

The evening communiqué of September 7th says:—

In retaliation for the bombardment of the open towns of St. Dié and Gerardmer by German aeroplanes a French aeroplane squadron dropped bombs on the station and the military establishments of Freiburg-en-Breisgau, and it was observed that a fire broke out there. All our aeroplanes returned undamaged.

Our aeroplanes also bombarded the railway stations of Sarreburg, Pont Faverger, Warner, Iville, Tergnier, and Lens.

Last night one of our dirigibles dropped bombs on the railway lines round Peronne.

* * *

The afternoon communiqué of September 8th says:—

In consequence of the bombardment of Nancy by German aeroplanes, a French aerial squadron dropped bombs on the military establishments of Frescati and the Gare des Sablons at Metz.

* * *

The evening communiqué of September 8th says:—

Five German aeroplanes this morning dropped bombs on the plateau of Malzeville, where they did no damage, and on Nancy, where some victims are reported.

In co-operation with the British Naval Air Service our machines bombarded the aviation sheds at Ostend. One of our air-squadrons also dropped some sixty shells on the aviation ground at St. Médard and on the railway station at Dieuze.

* * *

The communiqué of September 9th says:—

Some fifty shells were dropped yesterday by our aeroplanes on Challerange railway station.

On the night of the 8th one of our dirigibles bombarded the railway station and factories at Nesele.

* * *

The afternoon communiqué of September 10th says:—

Our aeroplanes this morning bombarded the mines and the batteries in the Nonnenbrück Wood, as well as the railway station of Lutterbach.

Some thirty shells were dropped on the railway station at Grand Pré.

* * *

The evening communiqué of September 10th says:—


Two German aeroplanes dropped some bombs on Compiègne, aiming particularly at the hospital establishments. There were no casualties, and only some unimportant material damage was done.

An Aviatik was forced to land in our lines near Hangest, in Santerre. The aviators were taken prisoners.

Six German machines attempted this morning to fly over Ste. Menchehold, but were obliged to make a right-about turn in face of the fire of our batteries.

* * *

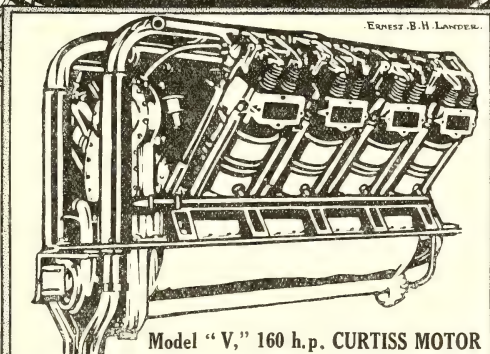
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Enemy aeroplanes threw some bombs yesterday on Compiègne. Our aeroplanes effectively bombarded with heavy bombs the aviation sheds at Brayelle.

* * *

The communiqué of September 13th says:—

By way of reprisal for the recent bombardments of Lunéville and Compiègne by the enemy aeroplanes, a squadron of nineteen aeroplanes this morning flew over the town of Trèves, on which about one hundred shells were dropped. The station and the Reichsbank were clearly hit. The same squadron, after returning to its base and landing, set out again in the afternoon and dropped fifty-eight shells on the station of Dommary Baroncourt.

Other aeroplanes bombarded from a low altitude the station of Donaueschingen, in Baden, and of Marbach, a district where movements of troops had been reported. They were able to note the effectiveness of their fire on the objectives aimed at and on a moving train, which was compelled to stop.

* * *

A message from Paris on September 12th says:—"Two Taubes flew over Compiègne yesterday morning and dropped bombs on an ambulance. About 100 arrows were also dropped. Each arrow bore the inscription, 'Made in Germany' on one side, and on the other, 'Invented in France.'"

* * *

It is reported from Paris that on September 6th a German aviator, flying at a great height over Chavannes-sur-l'Etang—an Alsatian commune on the old frontier—dropped a wreath bearing the inscription: "In memory of Pegoud, who died a hero's death. From his adversary."

* * *

The "Matin" correspondent at Nancy reported, under date Sept. 6th, as follows:—"Flight Capt. Féquant was killed this morning by bullets from German machine-guns near Sarrebruck. His pilot brought him back to the Malzeville Plateau, where it was discovered that he had been hit in several places in the head and chest. The aeroplanes by which the captain and his pilot were attacked were three in number."

[Captain Féquant was one of the earliest and best known of the military pilots of Farnans. His death is a great loss to the French Army and to aviation in general, for he was respected and loved by all who came in contact with him.—Ed.]

* * *

The "Excelsior" (Paris, September 9th) says:—"The famous Swiss aviator Audemars yesterday afternoon made a successful attempt to establish a new altitude record."

He started from Issy les Moulineaux at three o'clock, and descended an hour later at Villa Coublay, where the officials of the French Aero Club noted that the barograph showed 19,800 feet. Reuter says:—"Audemars thus easily beat the record of 18,630 feet held up to the present by Legagneux. He stopped his flight owing to cold."

[But he is a long way below the German record of some 25,750 feet, set up by Herr Oelerich on a D.F.W.—Ed.]

* * *

A message from Paris on the 13th says that the Government is understood to be considering the expediency of creating a new Under-Secretaryship of State for War, uniting the aviation and aeronautical services at present under the direction of General Hirschauer.

GERMANY.

The communiqué of September 7th says:—

German battle airmen shot down a hostile aeroplane over Cappel, south-east of St. Avoild. Its occupants were killed.

* * *

The communiqué of September 8th says:—

A German Army aviator shot down an armed French

aeroplane north of Le Mesnil, in Champagne. The enemy aeroplane fell in a burning condition.

The enemy air attack on Freiburg im Breisgau was without result.

* * *

The communiqué of September 8th says:—

German aerial squadrons have attacked Nancy.

* * *

The communiqué of September 11th says:—

Our airships heavily bombarded the railway centres of Wilejka, east of Wilna, and Lida.

* * *

The communiqué of September 12th says:—

Hostile aviators yesterday morning dropped bombs on Ostend, but no damage was done and nobody was wounded.

* * *

The later communiqué of September 12th says:—

In the morning of September 12th several Russian hydro-aeroplanes attacked a small German cruiser off Windau. Eight bombs were dropped, which missed their aim. One enemy aeroplane was shot down and taken to Windau. The crew, consisting of two Russian officers, were taken prisoners.

* * *

The communiqué of September 13th says:—

In the Western theatre of war the situation remains unchanged. An enemy aeroplane was shot down near Courtrai and the occupants were taken prisoners.

A second aeroplane was shot down over the wood of Montfaucon, to the north-west of Verdun. The occupants were found dead.

* * *

It is reported from Copenhagen that the commander of one of Germany's biggest and most modern naval airships, Dr. Sticher, is now reported to have been killed in action a little while ago. Dr. Sticher was probably Germany's most able aeronaut. He was attached to the German airship section stationed on the Belgian coast. One may surmise that his ship was destroyed at the time he was killed.

RUSSIA.

The communiqué of September 11th says:—

A hostile Zeppelin flew over Baltic Port (near Reval) yesterday and threw some bombs.

Our seaplanes dropped bombs on German ships in Windau harbour.

In the Black Sea, near the Crimean Coast, enemy submarines are reported. Torpedo-boats and hydro-aeroplanes have been sent to locate them.

* * *

The Petrograd correspondent of the "Morning Post" reported on September 12th:—

"The capture of Riga or a successful landing at Pernau would have been eminently useful from the strategic point of view if it had been effected at the time of the great attempt. . . . With the object of discovering an opening for this manoeuvre, German hydroplanes (*sic*) have been very busy examining the coastline for some time past. Now the Zeppelin has got to work. On Friday a little island forty miles west of Reval was investigated by a Zeppelin, which dropped a few bombs, but with what result is not yet known.

"Across the Gulf of Finland Russia has drawn since the war opened a veil of such effective opacity that nothing German has yet succeeded in penetrating. The Zeppelin obviously came on a voyage of discovery, and appears to have returned unharmed. But several Russian hydroplanes at the same time visited Windau, where German vessels utilised in the attempted landing at Pernau are harboured, and dropped a number of bombs into the thick of the shipping."



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ITALY.

The communiqué of September 8th says:—

A squadron of enemy aircraft yesterday made two flights in quick succession over one of our flying camps in the Lower Isonzo region. They dropped three bombs, which fortunately caused no casualties or material damage. During the second raid, while shells were bursting, our aircraft boldly rose, but the enemy squadron rapidly flew away. During their retreat the enemy dropped bombs on one of our military camps and killed three soldiers.—CADORNA.

* * *

The communiqué of September 9th says:—

One of our aircraft yesterday morning bombarded the railway station at Klaus, east of Santa Lucia, scoring several hits and damaging also a neighbouring bridge over the Baca.—CADORNA.

* * *

The communiqué of September 10th says:—

Enemy aircraft once more attempted sudden raids here and there yesterday. San Giorgio Bagni di Sella, in the valley of the Maggio Torrent (Biento), and Grado, on the Lagoons, were bombarded, but no damage was done.

* * *

The communiqué of September 12th says:—

In the zone of the Lower Isonzo our aerial reconnaissances established that the enemy were building fresh defensive works of an almost permanent character. According also to information received from a trustworthy source, fresh contingents of troops and heavy artillery have reached our adversaries.

Two of our aeroplanes effectively bombarded the encampments near Oppacchiella.

* * *

It was reported from Venice on September 7th that two Austrian seaplanes on Sunday afternoon dropped bombs near Chioggia without causing any damage. One of the seaplanes was brought down and sunk by Italian guns. The two officers were made prisoners.

* * *

My remarks about fires in last week's notes were unhappily both a comment and a preface, for another and even more serious loss has befallen Italy by the explosion of a petrol-tank, this time on a Savoia-Farman at Costa (Malpensa). While Lieut.-Instructor Rosimini was pulling up his machine on landing from a flight with pupil, 2nd Lieut. Rocca, a muffled explosion was heard, and before the unfortunate couple could even get free of their safety belts the whole "appareil" was ablaze, and when help came all was over.

Is there absolutely no way of avoiding such waste? If tanks and pilots must be contiguous, could not the former be housed in an asbestos or other fireproof compartment?

Of suggestions there is doubtless no end. Rather, then, let us talk of the explosion of petrol supplies as the usual thing and quite a reasonable event to look for. Then perhaps someone will rise up and call us fools and show us how that such waste need not be made if his patent guaranteed petrol reservoir, etc., etc., and vide his advertisement on page (—).

* * *

Manissero, of whose doings there appears to have been some idle chatter recently, is by now at the front, piloting a waterplane, which accomplishment he has recently added to those of a tip-top flier of Blériots and other craft and a successful grip of the business side of life.

* * *

The two waterplanes which attempted to attack Venice on September 5th about teatime were not a very profitable investment for Austria. So quickly and warmly were they welcomed that their approach never got nearer than the outer fortifications, and their bombs all went crab-hunting except one, which upset the lizards basking on

an old wall. It was a projectile from a heavy gun which brought the one down, by "doing in" her floats, apparently, as she sank directly after the captured pilot and observer had been got on board an Italian torpedo-boat.

* * *

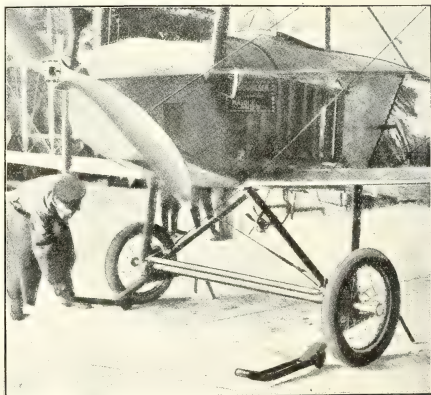
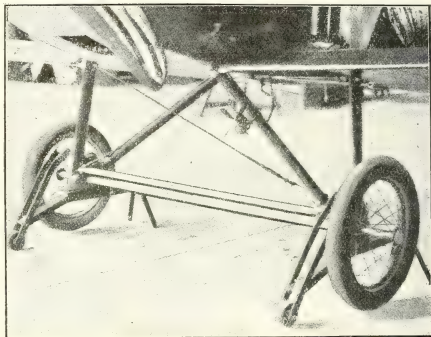
To the other qualities of the lamented Adolphe Pégoud I feel I should add a very forgiving nature and a real love for Italy. For, in spite of all that occurred less than two years back at Milan, he hastened to offer his services to the air forces of this country (*via* the Embassy at Paris) on her entry into the war.

* * *

One of Italy's best-known scientific men, Padre Alfani, of Florence, is said to have devised an apparatus to ensure bombs falling from aeroplanes absolutely vertically, without drift, I wish to say. The invention is based on a principle never before applied to this object. One scarcely knows whether to hope it is true or not, in these days of the ubiquitous spy.—T. S. H.

BELGIUM.

In contradiction to the German official communiqué concerning the recent bombardment of Zeebrugge by the British Fleet, the "Telegraaf" (Amsterdam, September 9th) learns from Bruges that the British Fleet from a short distance fired some sixty shells, which caused considerable havoc. The central airship shed, which contained two dirigibles, was also badly damaged, as well as the Solvay Factory, though nothing is known as to the amount of damage done, as no civilian is allowed to enter the works.



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It was reported from Amsterdam on September 9th that a Zeppelin left Brussels flying towards Antwerp on September 7th and returned next morning. The Exchange Co. says:—"While flying over Stockel, near Brussels, the airship lost its propeller and fell on a house. It was entirely destroyed by the explosion which ensued. The crew are said to have been killed. This statement is confirmed by three travellers from Brussels."

[Travellers' tales as usual. Still, a burst propeller on a Parseval might cause such an accident, and the Belgians never seem able to tell the difference between a kite-balloon and a Zeppelin.—Ed.]

The "Morning Post" correspondent at Amsterdam reported on September 10th that a few days ago a Zeppelin airship, whilst manœuvring in the vicinity of Brussels, was suddenly attacked by a British aeroplane at Berchem and totally destroyed. Up to the time of telegraphing no further details have been received here, but it is reported that all the crew were killed.

[This may be another version of the story above.—Ed.]

The same correspondent says:—

"A report from Ghent says that a French airship dropped bombs on the aerodrome at Gondrade, near Ghent. The main Zeppelin shed was not hit, but the subsidiary buildings were destroyed. It is estimated that 103 men were killed.

"The 'Tyd' reports that on Sunday some British or French aviators dropped bombs on Roulers, ten persons being killed and two injured."

[It is to be hoped that these stories are true.—Ed.]

DENMARK.

A message from Copenhagen, September 8th, states that during last week three German hydroaeroplanes were lost off the Danish coast. The crews were saved by fishermen.

Apropos the report from Copenhagen that the Germans are making a new type of flying machine modelled on the Russian pattern, the well-known Swedish aviator and owner of the Soedretelje aeroplane factory, Baron Cederström, who has frequently been to Germany, has stated to the Swedish Press that Germany is making some new large aircraft on the German model which he describes as splendid. The Germans, he says, may have got some slight idea from the Russians in regard to its manufacture, but the machine as a whole is German.

[Baron Cederström is no bad judge of an aeroplane, and even allowing for Swedish pro-German prejudices, one may accept his dictum that the new big German machines are "splendid."—Ed.]

According to a telegram to the "Berlingske Tidende" (Copenhagen, September 9th), Zeppelins were observed on the 8th over the Great Belt flying southward. According to the Swedish papers a new line of German patrols has been drawn across the international passage between the Swedish coast and the Danish island of Bornholm. Small vessels and Zeppelins are cruising in the Baltic constantly.

[As a matter of fact they have been doing so ever since the beginning of the war.—Ed.]

It was reported from Copenhagen on the 10th that as a fresh flotilla of British submarines has passed through the Sound, Zeppelin airships were reconnoitring all the previous night and that morning over the international waters of that channel. Their search was a vain one. The movements of the airships were closely followed from the forts.

SERBIA.

A Rome report says that Austria's threat to march through Serbia is treated by the Serbians and Roumanians with indifference. Serbian aviators, who have reconnoitred the whole region, state that the Austrian forces on the Serbian frontier do not exceed 40,000 to 50,000 men.

BULGARIA.

Bulgarians state that German aeroplanes are constantly flying between Orsovo, in Hungary, and Constantinople over Serbia and Bulgaria. One is said to have fallen on Bulgarian territory and to have been captured.

The "New York Herald" (European edition) on September 12th published the following tall story from its correspondent at Belgrade:—

"Captain Paulhan fought and won a thirty minutes' duel with an Austrian aviator right over the city of Belgrade, not far from the American hospital, and has since been decorated by the Crown Prince Alexander. Paulhan used his machine gun to such effect that he killed the Austrian observer and mortally wounded the pilot. He then descended to within a few feet of the falling aeroplane and photographed it. The two machines by the time the duel terminated had reached the river, and it seemed likely that the Austrian aeroplane would fall into its own territory. Paulhan, to prevent this, dropped a bomb on it and blew it to pieces.

"The Crown Prince, after bestowing a medal on the hero of this exciting episode, went up with him for a forty-five minutes' flight."

ROUMANIA.

A correspondent of the "Express" who has been visiting neutral countries writes:—

"One night in Bukarest I saw a German aeroplane flying over the city. It flew at a great height and speed, and people uttered their discontent at this breach of neutrality. I heard later that the German aeroplane had started from the Carpathian mountains, on its way to Constantinople.

"Whether it ever got there I do not know, but a few days later when I arrived in Adrianople I saw a German aviator on a stretcher. He had a broken leg and terrible injuries to his skull, and was carried in my train to get proper attention at the German hospital in Constantinople."

SWITZERLAND.

A correspondent of the "Express" who has been visiting neutral countries writes:—

"Two French aviators who have been interned for some months in Switzerland bitterly complained to me about the refusal of the Swiss authorities to allow them to wear civilian clothes. Although they had given their word of honour not to escape, the permission they desired had not been granted. The officers had asked for it as they had no rest in the streets in their uniforms. Everybody made so much fuss of them that it became tiring."

TURKEY.

A message from Mitylene states that English destroyers co-operating with Allied seaplanes bombarded the Turkish camps at Aivali (Asia Minor coast) on September 8th, causing great damage. Many Turks were killed or wounded.

A second squadron successfully bombarded the fortifications around Smyrna.

A message from Constantinople says it is reported from Smyrna that two hostile gunboats fired 20 shells at a lighthouse in the port of Karstoprok [on the Anatolian coast near Budrum (Halicanassus)].

Next day an airship bombarded the port of Ekindisjik (south of the Kujdsjiez Lake near Marmaras) with about 30 shells.

DESERVED SUCCESS.

The directors of S. Smith and Sons (Motor Accessories), Limited, who supply large quantities of aircraft accessories, announced on September 13th that the profit for the financial year ended July 31st, 1915, before charging income tax and directors' remuneration, was £21,591, and that a dividend of 10 per cent. had been declared.

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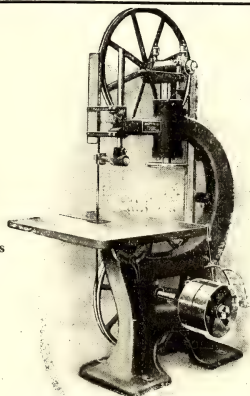
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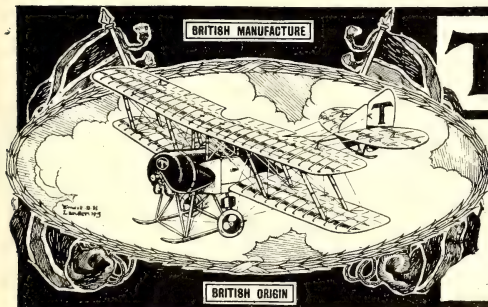
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Efficiency in Production.—(Continued.)

BY ANGLO-AMERICAN.

A WORD TO MANAGERS.

There are, doubtless, managers who deserve to be boiled, but, on the whole, they are quite well meaning fellows, and it is a pity they are so much distrusted by the workmen under their charge. Possibly, the managers are guilty of a certain amount of contributory negligence, for they do not appear to be at any pains to allay suspicion.

If I were to take the liberty of talking "like a Dutch uncle" to works managers, which, of course, I must not do under any circumstances, I should say that, judging by the department of those that I have seen, they are too fond of trying to "act the bahadur"—as an Anglo-Indian would say—too fond of standing on their dignity, of trying to ride the high horse, of lording it, if you like. They appear to like to go through the shops with an air of lofty and unapproachable inscrutability, and to be far removed from common mortals. They may think it befitting the dignity of their position, but to a merciless critic like me, it is ludicrous—and there are others so frivolously disposed.

After all, the manager is sharing the workman's struggle for existence—and probably having it a great deal harder if the truth were known—so he might as well get down off his pedestal and show himself human. His dignity might get damaged, but so long as he does not make himself cheap discipline need not suffer. He would not lose anything by it but rather would gain.

An illustration of this is to be found in the way the Piccadilly nut has won the heart of Tommy Atkins by dropping his nuthood and becoming a *leader*, and that is what labour wants. If the workmen could feel that the manager was a friend capable of understanding their difficulties and of appreciating their struggles and was really trying to *lead* them for mutual benefit, and to show them how they can make the best of such abilities as they have, it would go a long way towards bringing about an *entente cordiale* between the management and the men.

THE EVIL OF INFLUENCE.

The same diffidence about appearing to criticise those in high places, upon whom no desecrating hand must be laid, prevents me from mentioning, more than very mildly, another sore evil and one of the bugbears of the British commercial and industrial machine. That evil is installation of dud bosses in responsible jobs, just because they put money into a firm without any business ability or even training. It may not, at first sight, appear connected with the foregoing paragraph, but it is, in that the evil of it springs from the same primordial root, and that, stated unflinchingly in plain English, is "swank."

A man who has got some money, and fancies himself accordingly, wants something to amuse himself with and puts some money into a large concern, and is made head of an important department in consequence. Then he sets out to demonstrate how independent he is. And how little he need worry himself about such sublunary concerns as doing business, forgetting that a man's mission in life is to *do* something and not demonstrate how little he need do, and that he wastes the time of people to whom it is of vital importance to do business. It all spells inefficiency, and is, therefore, within the scope of this article.

A VERY DIFFERENT SYSTEM.

But to return to the relations of "master and man," almost anything would be better than the state of armed neutrality or suppressed war, where the workmen look upon the manager as their natural enemy whose chief concern is to do them all he can and resent being "exploited," and make it their concern to avoid being done.

Most general managers are too much occupied with their general management to be able to manifest a friendly interest in the employees, however much inclination they

might have, and for that reason under Taylor management there is a special staff manager whose business it is to know every employé of the firm as Julius Caesar claims to have known his army. He is the friend and confidant of every man or boy, woman or girl employed by the firm. On him, and to him alone, devolves the responsibility for the engagement, promotion, and, if need be, discharge of an employé.

The whole staff from the heads of departments to the men who sweep out the shops are tabulated on a card index under a sort of Bertillon system according not only to their qualifications and abilities, and, incidentally, their past experience and training, but also to their temperament and mentality, which are carefully noted and classified. This arrangement is not peculiar to Taylor system, but whether Taylor system has pirated it from other systems, or if other systems have acquired it from Taylor system is not very clear.

It gives an opportunity for modest worth to be discovered and encouraged. If the staff manager knows his business it ensures the right men being engaged, not as at present, where most often it is the man with the most successful bluff or the most brazen liar who gets a vacancy. It also ensures the right man being put in the right place.

FINDING THE RIGHT JOB.

A man who is a failure at ninety-nine things may be a genius at a hundredth, the thing is to discover the hundredth, and it is the staff manager's place to find it. As a rule, a man likes best the thing that he does best, but that is not always a safe guide. I know a man who likes singing, but if that is what he does best I hope I shall never meet what he does worst. Do you know him?

Hidden talent has a fair chance of being discovered and developed under this system. It may be said that "ability will out," but the cynic who said, "Ability will out at the elbows," was much nearer the mark as far as the ordinary conditions are concerned. With the general scramble for position and favour where promotion goes to the man with the most push or least scruple, if a man shows the slightest bit of ability beyond the most prosaic mediocrity he at once incurs the jealous hostility of someone higher up, and as the wise man has said, "Wrath is cruel, and anger is outrageous; but who is able to stand before jealousy?" Moreover, many a real genius has suffered, and does suffer, from the sheer inability of ordinary mortals to recognise the incipient swan in the "ugly duckling."

MERITED PROMOTION.

Promotion is more likely to go to the right man under scientific management than under haphazard working. If a man is wanted for a higher post the staff manager is asked to provide a man either by promoting one already in the firm or engaging one if there is nobody suitable. Thus a man cannot get pushed forward by unfair "influence," nor by toadying to or flattering a superior. A man cannot, for instance, get himself made a foreman by the astute move of marrying a foreman's daughter. Under ordinary conditions ability is often a hindrance to promotion.

Apart from the jealousy of superiors already alluded to, ability is a hindrance in another way. If the head of a department is asked to recommend one of his men for promotion, does he promote his best and most useful man? Not if he has any sense. At best, if he is very conscientious he will promote his second best man. If it is suggested that "There's So-and-So, he's a better man," the head of the department will say, "Yes; but I can't spare him." So the man's usefulness is a block to his progress. In many cases the surest way for a man to get promotion is to make a nuisance of himself.

(To be continued.)

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

THE ALL-IMPORTANT BANDEAU.

Purposely, nevertheless, I have left the question of installing the bandeau of pressure feed-pipes to the last, as it is the most delicate, as well as the most vital part of the Beardmore aeromotor. Not one of them should be connected up to its delivery point until it has been definitely ascertained that not the least filament of obstructive matter is left. And to make assurance doubly sure, the delivery points should be washed inwardly with a strong syringe-full of kerosene to begin with, and then plugged, pending connection. Then, having filled the pump casing, cast off the connecting sleeve on the driving gear-shaft, so as to permit the pump to be freely rotated until the oil flows out of each tube in a steady stream, into some receptacle, preferably a clean glass jar. Any dirt or filament that may have got into the tubes can then be seen: and, in any case, the oil, though saved, should not be used again until it has been filtered, not through linen, but through a double screen of metal gauze. If, however, the oil does not flow through any tube, disconnect that tube from the lubricator, and wash it out with the kerosene syringe. Like the drapers' stocks, it must be cleared or you will burst the whole show. However, assurance of a free flow having been duly achieved, you may complete the connections with an easy mind.

Remember, in all external lubricating, to "sweat yon surplus off again, this isna the Cunard." Keep her dry and sweet, not like a dose-house frying-pan. After each flight, re-fill all round: extra water to the radiators, soft rain-water only: petrol, through a doeskin or wash-leather filter: and oil, through a wire gauze strainer. And, again, after any dozen hours' running—whether continuous or in bits here and there—remove the six screw-plugs in the base chamber and drain off the oil. Then remove the breather pipes, and with a long-nosed syringe, wash the whole internals with about a couple of quarts of kerosene. To assure the thoroughness of this washing, set in the breathers again and give a dozen sharp turns on the propeller, so that every part will be well splashed. Then open the drain plugs, and allow the crank chamber to drip out to the last. In the same way, disconnect the pressure-feed bandeau, and wash its pipes out. Also remove all grease caps, and before re-filling, probe down to the actual bearing to make sure of the flow: and be most particular to ram the big automatic greaser at the rear end of the crank chamber with all the grease it will hold. The adjacent cam-shaft half-speed gear also needs about a couple of ounces of grease inserted with the gun; and the armature and distributor bearings likewise should have six and twelve drops respectively of cylinder oil.

THE BEARDMORE IGNITION.

So much for the lubrication. The ignition adjustment is easy enough, being the same as for any six-cylinder car proposition. One learns, of course, the quite academic facts that all Beardmore aeromotors have high-tension ignition—this being 1915, not 1905—that there is also a supplementary hand-starting magneto: that the 90 h.p. type magneto is of the double pole type, sparking two plugs per cylinder, and that 120 h.p. model has a plain magneto and an independent starting magneto, which not only works as such, but provides a secondary ignition for the motor. Otherwise, the main thing is to determine the most convenient position for the hand-starting magneto, bearing in mind the necessity of keeping the cable leads as short as possible. For the magnetos are set before leaving the works, so that the break between the two platinum-tipped screws occurs just as the break is made in the armature; i.e., just as the shield of the latter leaves the pole-piece: the effect being to ensure the spark

taking place at the plugs at the instant of maximum current generation in the magneto. This, of course, is the full advance position for "full load," and when any adjustments are made, the contact breaker must be fully advanced to the range of 12 to 15 m.m.

However, should it be necessary for any reason to remove either or both magnetos, I need hardly point out to anyone with the slightest experience of motors that the same absolute synchronisation as was given them at the works must be maintained when they are replaced. The main thing, then, to make sure of is the setting of the armature and contact breaker—i.e., so to effect the removal that this relation not only is not, but cannot be altered. In the most convenient way, then, clamp the armature gear stationary to the body of the magneto before demeshing, or even slackening off a single attachment. Then, with the relation of armature and contact breaker so maintained that the break occurs absolutely at the same instant—as will be seen by noting that the break between the two platinum-tipped screws occurs likewise—one may proceed to replace the magnetos.

IGNITION TROUBLE AND ITS DETECTION.

Now, in view of the care that is always taken in this respect, the fact results, that ignition trouble very seldom arises from this source. Mostly it may be looked for either in the earth connections or the plugs. The former is the more obscure, yet the more immediately and simply cured. The connections will have probably loosened from the normal complete contact, owing to some slight vibration, of which the effect gradually yet imperceptibly has increased to this result. Or else some spot of oil has shorted an apparently complete contact. In either case the cure is the same: remove, clean with petrol and burn off, replace and set home hard. On the other hand, the most usual and obvious source of trouble is the plugs; and experience has shown that very few types—however satisfactory in a car—will stand the merciless strain of an aeromotor under full load. Consequently, after extensive trial of numerous designs, the Beardmore people adopted the three-point type, and have ever since strongly recommended its consistent use, such a recommendation being equal to a command in the practical—and wholly unforgiving—conditions of aviation. Even so, they admit that, should any missing occur under full throttle running, it will almost always be due to the condition of the plugs, if not to any inherent defect in them. Obviously, then, one must test the plugs before wasting time in dismantling any other part.

TREATMENT AND CURE.

Usually, as in ordinary motoring, misfiring only occurs in one cylinder at a time, and then not always regularly. One or two missings, then, or even three, do not constitute certain indication of plug failure. A sudden speed variation, or one of the many effects of a momentarily irregular carburation, may account for it. But when it repeats at regular intervals, there is no mistaking it, and the defective plug must therefore be located at once. To do this, first run on one magneto and then the other alternately. Then switch off the current and feel the body of the plugs, when the defective one will usually be found a little colder than the others. This, however, is merely an indication, no sure test. That is only obtained by taking out each plug in turn, and "shorting" it to the cylinder jacket with a screw-driver, or any other such tool with a handle, and the immediate reduction of the motor speed will at once prove that that plug at least was firing properly. If, on the other hand, no lessening of speed occurs, that is invariably the faulty

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plug, which should immediately be replaced by another, new, or, at any rate, known to be in good condition. If the points are found to be coated with oil or carbon, clean them in petrol, using a stiff brush; or if the electrodes are burned or beaded, rub them lightly with a piece of the finest emery-cloth, again with a final petrol washing; and in any event test for the correctness of the gap to see that it does not exceed the normal 0.02 inch. But if the insulation is hopelessly waterlogged—as may be the case after a flight in misty weather—or cracked, or badly encrusted, the plug is useless.

(To be continued.)

EXTRACT FROM THE THOUSAND AND ONE FLIGHTS.

(By Our Arabian Correspondent.)

That which I am about to relate is a true account of what happened on the seventh day of last week, being the eleventh day of the month of Zeppember, in the reign of the caliph Grayam-al-Waite, formerly Flight-Commander of the Faithful.

Joining the caravan near the gates of the mosque of Swan-an-edgah, I proceeded towards the fertile valley of Hendhuu, which is reckoned by the Persians (who never go there) one of the Four Paradises of the world.

On arriving, I strode towards the entrance, and striking three blows on the gate, as I had been told, pronounced the words, "Open, Sesame!" The door, however, remained shut, and thinking my memory at fault, I cried in a louder voice, "Open, Lilies!" Suddenly there appeared a man in rich apparel, whom I perceived to be a merchant of Cash-hera. I asked admittance, but he demanded of me first a thousand sequins of gold, or two and six, before he would stand aside. My stratagem having failed, I was compelled to give him a bag of gold, and he opened the gates.

I found myself in a broad plain, in extent about a day's journey from the one side to the other, and surrounded by rich vegetation. On the western side of the valley were many large warehouses, palaces and mosques, and several people walking about. In the centre I saw some strange rafts, the uses of which I learned later.

In certain parts of this land, I was told, are found many precious minerals, such as the sodah and the djinn-jherail. There are sparkling fountains, where calabashes are filled with the juice of the grape and the gooseberry by female slaves for the refreshment of travellers. In another part of the valley skilled musicians play (on the loot), and sing of the long pilgrimage to Tippur-rareh, and of the Fire-worshippers who keep burning, in their camps, fires to welcome the return of the warrior tribes.

Here is also found the sheep, an animal about one cubit in height, having long wool over its eyes, so that it cannot perceive whither it goeth, and wandereth before the young masters or pupils of the air, who inhabit these parts, whereupon they fall upon it and slay it with their machines. The whole valley is white with the bones of these sheep.

I pass over many other things peculiar to this place lest I should weary you.

On the minaret of a mosque stood a crier, or muezzin, and, with a loud voice, he attracted the attention of the crowd. When the crowd had gathered round, he addressed both of them, saying: "The faithful are commanded to enter the sacred portals beneath where I stand, wherein may be obtained the services of the Magicians of the Air."

Being anxious to see for myself the strange things whereof I had heard, I went forward, and found myself in the presence of a man of a new race, curiously dressed. On making known my desires he conducted me to a machine of cunning workmanship, saying: "This is one of the greatest wonders of the world. If I wish to transport myself to the most distant countries through the air, I mount into this seat and turn a peg concealed there, and instantly I am on my journey."

Never having beheld anything like this, I answered that I was ready to see him perform what he had promised.

He clapped his hands thrice, and slaves appeared, some of them being laden with vessels containing oil, with which they proceeded to anoint the machine.

Having embraced these slaves and myself, and taken an affectionate farewell, he mounted into his seat, at the same time placing on his head a turban, having the power to protect its wearer against evil, and known as a warri-
nild.

Then one of the slaves, seizing hold of a part of the machine, turned it many times during the space of half an hour, at the same time pronouncing certain mystical words. The machine emitted a cloud of smoke, so great that it could hardly be discerned, and arose to a height of nearly ten cubits. In an incredibly short space of time the magician, whose name was Os-i-penku, had reached the far side of the valley and returned.

Filled with admiration for his agility, I begged him to allow me to accompany him on one of these aerial journeys. "Alas!" replied he, with tears in his eyes, "To-day is the

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Festival of Windbad, the Sailor, of whom, doubtless, you have heard. Hence, the monsoon rages, and Allah forbid that you should go up in this ancient bohks-khait!" And he went sadly to one of the pavilions, where he was regaled with tea from the far Indies, and many dried sweet-meats.

And another Magician came forth, by name Jai-el-höl, and mounting another machine, he rose rapidly into the air, circling about like a great bird, at the same time emitting oily and aromatic perfumes.

The monsoon still raged, and no more occurred, and as night fell I retired to my abode, intending to continue my adventures on the next day.

Returning next day to the valley, I found the wind somewhat abated, and many machines filled the sky, so that the sun was almost obscured. Among them was a great aerial raft having several couches, whereon reclined four or five travellers. At the sight of so frightful an object I became insensible and lay like one dead.

On recovering my senses I watched this huge machine go many times into the heavens, while porters ran continually to and fro carrying bags of gold to one of the pavilions, where sat one Teekemp-Wal-Ten and Pah-Fein, a member of the council, of genial countenance.

And many other magicians displayed their skill on divers machines, among them being Roche-Kelleh, Win-Tur, Bhö-Man, Man-Thön, and Seebi-Projja, besides one who wore a curious, travel-stained garb of Oriental fashion, and had come from a distant land, but flew not.

Then I perceived that by these means the merchants of this place amassed fabulous riches and smoked hookahs of great price, and I lifted up my voice to heaven, crying: "Bismillah! Great indeed are the profits!"

And I saw one of the slaves who toiled unceasingly at his work, and, being moved with compassion, I asked his name, and wherefore he laboured in this fashion. He replied, saying that his name was no concern of mine. And I answered in the words of the Eastern proverb, which says: "A good name is better than precious ointment." Whereupon he replied again, saying: "A good Gnome is better with precious ointment." And taking up a vessel bearing the word "Khastral," he continued his work.

And I saw and learned many other curious things at this place, until night fell, when I rejoined my caravan and returned to London, where I spent the remainder of my days with my wife and family in tranquillity.—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
London	Fine	Fine	Fine	Fine	Fine	Fine Windy	Fine
East Coast	Fine	Fine	Fine	Fine	Fine	Fine Windy	Fine
South Coast	Fine	Fine	Fine	Fine	Fine	Fine Windy	Fine
Midlands	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Lake District	Fine	Fair	Perfect	Windy	Windy	Windy	Windy

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, R. Kenworthy, A. E. Mitchell and G. Virgilio.

Pupils with instructors on Beatty-Wright machines: Messrs. Arbon (21 mins.), Bond (5), Crossman (20), FitzHerbert (15), Fox (20), Hoskins (10), Morgan (45), Onley (12), Ross (15), Sampson (15), Smith (10), Theo (20), Thompson (15) and Wilmet (23).

On Caudron machines: Messrs. Begg (20 mins.), Brown (10), Byrne (20), Collier (30), Cowper (30), Gayner (60), Grant-Suttie (15), Greenhill (20), Hodgson (20), Hoskins (30), L. F. Jones (30), Lashmar (60), Mellings (20), Moxon (15), Nash (10), Owen (20), Rimington (70), Richard (10), Symington (10), Tremlett (10), Whincup (10), Patterson (20), Murdoch (15), Duffus (30), and Brynildsen (20).

Certificates were taken during the week by Messrs. R. J. E. Cadogan and R. D. Sampson.

MISCELLANEOUS ADVERTISEMENTS

All advertisements for this column should arrive at this office by 6 p.m. MONDAY to ensure insertion.

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Machines in use: Beatty-Wright propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday by Messrs. Roche-Kelly and Kenworthy, and on Sunday by Messrs. Roche-Kelly, Prodger and Kenworthy.

AT THE HALL FLYING SCHOOL.

Pupils with instructor H. Stevens: Messrs. Huggan, Russell and Hatchman practising circuits, eights and landing on the mark.

With instructor C. M. Hill: Messrs. Watson, Littlewood, Wenner, Bayley, Drew, Cook and Bangs practising half circuits and circuits and landings.

With instructor C. Bell: Messrs. Dresser, Baron, Ackroyd, Lieut. Dalley, Stirling, Hall, Broad, Brandon, Hooker, Sepulchre, Bond, Camberbirch, Butterworth, Wilkins and Arnsby practising rolling or straight flights alone.

The following pupils successfully passed for their Royal Aero Club certificates: Messrs. Arthur, Walker, Huggan and Russell.

Mr. J. L. Hall and instructor Stevens were out several times during the week giving exhibition flights on tractors Nos. 4 and 6.

Machines in use: Hall tractor (Government type) biplanes.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils doing straights with instructor: Prob. Flt. Sub-Lieuts. Biscoe, Gammon, Man, Sadler, Corry, Hadow and Till.

Landing practice: Prob. Flt. Sub-Lieuts. Cross and Till.

Circuits alone: Prob. Flt. Sub-Lieuts. Ford and Roach-Pierson.

Figures of eight: Prob. Flt. Sub-Lieuts. Ford and Penley.

Certificates were taken during week by Prob. Flt. Sub-Lieuts. Ford and Penley.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with instructor on machine: Messrs. Hughes, Liddell, Muspratt, Prothero, Chambers, Ball, Gallop and Ball.

Doing straights or rolling alone: Messrs. Rees, Sherwood, Hughes, Gallop and Bailey.

Machines in use: Ruffy-Baumann (60 and 50 h.p.) biplanes.

Another Gnome has been taken down for the benefit of new pupils, as strong efforts are now being made to give students a technical as well as an aerial training.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irwing and C. M. Jacques.

Pupils doing straights or rolling alone: Messrs. Knowles, Lochett, Lewis, Hordern and Dalrymple, rolling. Messrs. Grimwade, Frost, Rochford, Blackburne-Maze, Woodley and Woolley, straights.

Figures of eight or circuits alone: Messrs. Rogers, Jamieson, Sargood and Franklin.

Extra practice, Mr. J. A. Turner.

Lieut. G. Welsford and Mr. P. Moynihan both took their "brevets" this week, making good, steady flights.

Machines in use: Three Caudron type tractors.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with instructor on machine: Messrs. Ingham (11), Inglis (5), Leigh (9), Lawton (14), Macaskie (7), Part (8), Ridgway (7), Shaw (18) and Yates (5).

With instructor as passenger: Messrs. Lawton (20), Macintyre (28), Part (10), Reid (13), Ridgway (18), Robertson (22), Robinson (6) and Yates (11).

Figures of eight or circuits alone: Messrs. Laidler (12), Macaskie (66), Reid (20) and Slingsby (30).

Mr. Macaskie successfully passed test B for certificate.

Machine in use: N.A.C. 50 Gnome propeller biplane.

Several passengers carried, including Mr. H. D. Pearsall, J.P., who came on from the British Association meetings.

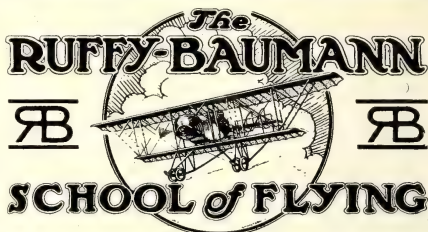
BIRMINGHAM.

AT THE MIDLAND FLYING SCHOOL.

Instructor for the week: Mr. S. Summerfield.

Pupils doing straights or rolling alone: Messrs. C. Mento, J. Munton, H. Yam and C. Morley.

Although the weather has been exceptionally fine very little school work was done owing to the intense mist morning and evening and rather too much wind during the day. Most of the pupils have received instruction in building and propeller making, all showing a very keen interest.



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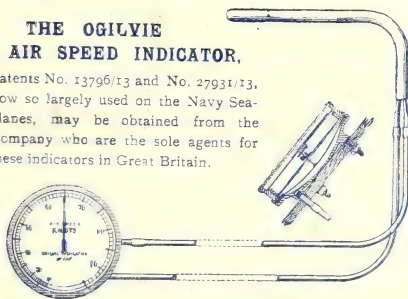
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WEDNESDAY, SEPTEMBER 22, 1915

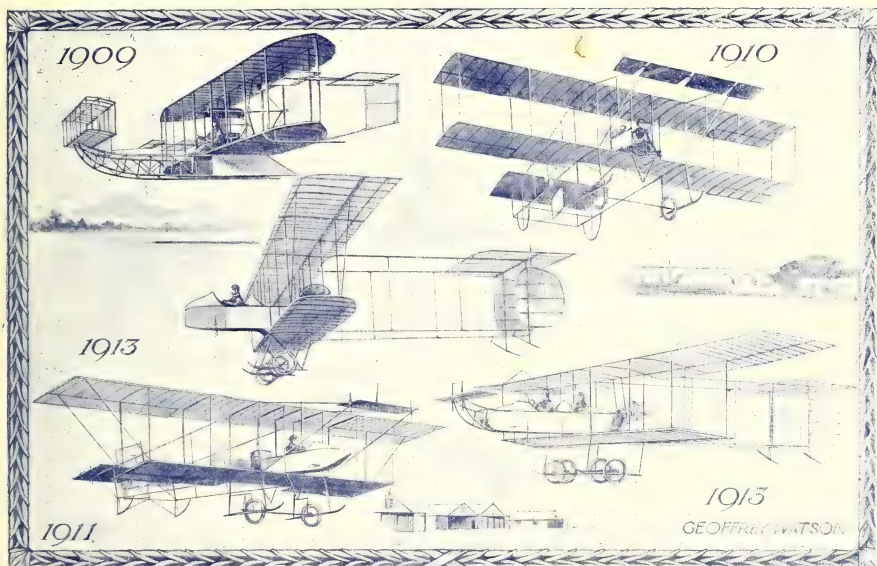
Edited by
C. G. Grey

Vol. IX. No. 12

ONE PENNY WEEKLY

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MILESTONES—VI(A).




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ON INCREASING OUTPUT.

A VERY DULL SUBJECT, FOR PRACTICAL MEN ONLY.

It is now possible to return to our old friend "Ornis," whose theoretical ideas on the subject of increasing output are in the main fairly sound—in fact they agree closely in many details with an article on "Standardisation" which appeared in these columns months before the war. There is nothing unusual in official views of any given date being the same as those expressed by practical men a year or so earlier, the only pity is that it takes so long for practical ideas to penetrate to those who have authority to put them into operation.

The opening section of the paragraph under discussion reads thus:—

"As to increasing the contractor's output, what is required is standardisation of every standardisable part. All petrol cocks, levels, control levers, wire, turnbuckles, tank fittings, forks, wheels, axles, tyres, and instruments should be the same for similar work. For heavier aeroplanes, heavier wheels, tyres, and axles will be needed, but these heavier parts should be the same for all the heavy types. It might be supposed that the sizes of tubes could be usefully standardised also. As soon as an attempt is made to get out a new solution of the old problem of only one type this solution should be examined; if the improvement warrants it, adopt it; but if the result is merely 'about as good as before' abandon it ruthlessly."

Now this system would have been excellent if it had been put into operation when suggested some eighteen months ago, and if it had been carried out by men who knew their business. The trouble has always been that attempts have been made to standardise articles designed by some faddist or by someone who has no knowledge of common or garden engineering production.

For instance, the officially designed petrol cocks are troublesome to produce, difficult to operate, and inefficient in action, and have no advantage whatever over a plain brass tap such as one finds on every motor-car.

AN OFFICIAL GADGET.

The official petrol level is a wonderful gadget with a float in the tank in front of the passenger which operates a maze-like arrangement of fine silk cord running over many pulleys to a dial in front of the pilot. The cord takes a man a day to thread up, and generally breaks before it has been in use a week, and after that the pilot judges his petrol level by pumping petrol from the reserve tank beneath his seat into the front tank till the petrol squirts out of the vent-hole onto his passenger. It would have been much simpler to have fitted an ordinary glass gauge to the forward tank and to have let the passenger signal when more petrol was wanted from the reserve tank. Even if the pilot were flying alone he would be no worse off than he is now when the cord breaks or sticks. And, anyhow, any practical gauge-maker could suggest several simple ways of getting over the difficulty of indicating the petrol level from the front tank to the pilot's seat.

Control levers might have been standardised to some ordinary motor-car type instead of going in for a special design, for in this way plentiful supplies could be got whenever required. And, for the matter of that, any one lever is about as good as any other, provided it is up to strength and does not exceed a certain specified weight, so the levers might be left to the discretion of the aeroplane makers to use anything that would save time in delivery.

WIRE.

Wire is pretty well standardised as it is. Incidentally, it is rather amusing to find the Royal Aircraft Factory claiming to have invented "streamline" wires—which they calmly proceed to label RAF-wire. As a matter of fact, oval wires have been used on various jobs before now, streamline casing over ordinary wires has been tried on other aeroplanes, and, for the matter of that, the old Blériot "ribbons" were in reality nothing else but a device to minimise head-resistance in the same way. Also, despite the danger of those ribbons snapping, I am inclined to think that they are more dependable than wire which has been swaged down to an oval section, or bodged-up at the ends to take a thread, on which thread the whole safety of the aeroplane and its load depends. If the wire is hard enough to take a reliable thread in that size it would seem to be perilously near being too hard to stand vibration, and if it is soft enough to stand vibration the thread must be on the verge of safety. Of course, if the precise degree of hardness is found, all may be well; but in these days of rushed production it is foolish to trust to extreme precision in chemical processes such as hardening, tempering, and otherwise heat-treating metals.

THOSE CHEMICAL STUNTS.

The more it is possible to use common steels for small parts the better. I had an instance of this not long ago. Every pilot of a B.E. knows the little studs which go through the eyes of turnbuckles (or "strainers," as some people call them) and through the eyes of the corresponding connections at the end of the wire, and are held in place by a thin wire or split-pin. Any ordinary man would use good quality steel for these, as they are simply in shear, and would take years to wear through.

The designers of the machine insist on having them casehardened, with the result that a slight error in the heat-treatment may make them as brittle as carrots. In such case, a sudden jar would probably snap off the end where the hole for the retaining wire runs through, and the stud would fall out and let the wire part from the turnbuckle.

Apparently official inspection does not include tests for brittleness, and some time since some such brittle studs got through. Happily, the maker of the machines in which they were used discovered the mistake and, being a conscientious person, promptly sent off men to replace some hundreds of such studs, free of cost to

the Government, though if Government officials had been gifted with common sense it would have been impossible for such an incident to have occurred.

A less conscientious man might have been afraid of giving the mistake away by replacing the studs, and the machines might have gone out and have killed someone in one of those unexplained accidents for which the pilot is usually blamed because there is no evidence to incriminate the maker. Yet all such danger might have been avoided by using a fairly hard grade of steel such as is a common market product.

ON MARKET PRODUCTS.

"Ornis" and his friends should remember that output may be increased far more rapidly by using standard material and standard sizes than by merely insisting on a lot of freak detail designs being carried out in fancy materials by fancy methods in vast quantities.

A splendid instance of how not to do it is found in the turnbuckles to which he refers. Everything about these things departs as far as possible from standard. The barrel is to be made of a certain specified fancy metal, doubtless a wholly excellent metal for its purpose, and one which I know does good service in various engineering work and is very reliable in quality. There happens, naturally, to be a big demand for this metal and supplies have been at times hard to get. It took months in some cases for firms making these turnbuckles to get permission to use other metals which serve the purpose quite well, and then permission was only given thanks to military pressure on the civilian experts who designed the turnbuckles. Actually, steel barrels are cheaper to make so far as material is concerned, and stronger for their weight. The only objection to them is that they wear out screwing taps quicker and that the screws may rust into the barrels if not properly greased.

Apart from the question of material, the threads in every size of the official turnbuckles are of unusual sizes and types, so that special taps and dies have to be made for them. It would have been just as easy to have designed them in the first place with common threads, so that anyone could go to any tool-dealer's shop and buy taps and dies from stock. In the present state of the small tool-making trade, when thousands of the best men have enlisted, when thousands of others work just as and when pleases them best, and when everyone is too busy on standard work to be bothered with special jobs, it is practically impossible to get the required taps and dies sufficiently accurate in workmanship. The result is that the people who make the official turnbuckles have to keep toolmakers of their own making the taps and dies, when the men and the space they occupy are wanted for something directly productive.

WASTED TIME.

Again, examine one of the official turnbuckles and observe the way they are machined. Note the tiny piece of "knurling," or roughing like the edge of a coin, round the jaw and tongue. This serves no particular purpose, and it means an extra operation in machining which costs time and money. Also, because it projects beyond the biggest diameter of the jaw proper, it means that the steel rod from which the thing is turned has to be bigger than if the "knurling" were eliminated, which, again, means wasting so much steel of special and expensive quality.

Observe, again, that the shank of the turnbuckle is thinner than the level of the thread—(Short Bros.' patent). This also means an extra operation when producing from the bar on an automatic screwing machine.

Now consider the American method of production.

The whole thing is whacked out from a rod by one punch from a drop-hammer. The eye is punched through the head, the shank is thinned down, and the larger diameter is left for the thread. All that happens afterwards is that the thread is cut on the larger diameter of the shank, and the rest is filed over by girls or lads.

In the case of the jaw end, the jaw is slotted out and drilled on semi-automatic machines, also by cheap labour—not sweated labour by any means, but by unskilled workers who are taught to do one job in the fewest possible movements and thus earn more money at it than they ever would in the ordinary way of business.

SCREW THREADS.

American screw work is notable for its accuracy, and apparently an unlimited supply of taps and dies can be procured, but it seems that they are in American sizes and pitches. I do not know whether anyone has tried to get American taps and dies to suit the R.A.F. turnbuckles. If not, it might be worth while trying.

In any case, it would pay someone to set to work and turn out a supply of really accurate screwing-tackle for this job. At present there seems no definite shape of thread, and if one tries to put a screw tapped with sharp pointed threads into a hole with rounded threads the effect is disastrous. Apparently small-tool makers please themselves about the shapes of their threads, and consequently a screw threaded by one maker's die will not fit a hole tapped with another maker's tap, although the number of threads to the inch and the diameters of the threads may be microscopically accurate.

THE TANK TROUBLE.

As to forks, it is not clear what "Ornis" means—perhaps he thinks the old Blériot chassis is still used—but when he talks about tank fittings I am with him all the way. All these patent fakements of fittings ought to be scrapped and simplified patterns substituted. Moreover, the tanks themselves could be cheapened by half—which means that they could be made in half the time.

Look at the forward tank on a B.E.2c. and the astounding way in which it is fitted to the engine-bearer tubes. There is a wonderful sheet-steel edifice resembling the legs of a Moorish stool, and to it the tank is fixed by weird little lugs of its own. The sheet-steel legs look simple and light, but they have obviously been designed in the drawing-office with a piece of paper and a pair of scissors. When one comes to reproduce them in special grades of steel it is quite another story. Either the vertical surfaces have to be carved out of sheet steel at enormous expense of time and waste of material, and then welded to the strip which joins them together, or else they have to be pressed out, with equal waste of material and with tremendously costly dies, but with considerable saving of time.

The whole job could be done equally well and equally lightly with a couple of pieces of wood or short lengths of tube. The present arrangement costs several pounds in labour, whereas the timber supports could be made for a few shillings and the tubular ones for little more. The tank, also, could be simplified in such a case and its fancy lugs replaced by a straightforward job.

WHERE MECHANICS ARE NEEDED.

The whole of this piece of fitting is a very pretty example of the kind of thing that happens when school-taught pseudo-engineers are let loose among Government money, without practical mechanics to give them fatherly advice. There are probably plenty of mechanics at the R.A.F. who could put things of this sort right if they were let, but advice from the mere "shop"

hands is not welcomed by the drawing-office, so the experienced men—such of them as have not left in disgust—have resigned themselves to drawing their weekly money and doing as little as possible for it.

The "brains" of the R.A.F.—as they are sarcastically called by the workmen—do not appreciate practical advice from those whom they consider their social inferiors. You see, a suburban polytechnic is socially so superior to the work-bench at Crewe or Derby or Doncaster or Swindon, or on Clyde-bank or Tyne-side.

INSTRUMENTS.

As to instruments, I am all for standardising instrument boards, for any maker can adapt his instruments to fit the standard board, just as all tyres fit standard rims; but there seems no reason why all instrument-makers should be condemned to make one particular instrument which happens to please someone at the R.A.F. Suppose there are half a dozen different compasses or air-speed indicators, all equally reliable and equally well liked by pilots, why should the makers of five of them have to give up their own type, sacrifice their own patents, scrap their special tools and methods of construction, and pay a royalty to the sixth for the privilege of decreasing their output while they are learning to make his type of instrument?

It all leads to inefficiency, and it may all happen because someone among the technical advisers of the

War Office has a personal and touching interest in the favoured firm—which is one good reason for abolishing any attempt to create a monopoly. By all means standardise sizes and general types, but avoid anything which will throw the sources of supply into the hands of any one firm or individual or clique.

TYRE SIZES.

Tyres and wheels have practically been standardised for ever so long, simply because one firm has gone out after the business and has offered a specially good article in certain sizes only, so that makers of aeroplanes have had to adapt their chassis designs to those sizes. This is precisely the kind of standardisation which is to be recommended, and it is the basis of the kind of standardisation which makes American cars cheap. The British car-maker has got as far as realising that he must adapt his design to standard tyres, standard plugs, and standard magnetos; after that he lets his design wander about at its own sweet will. The American, unless he is so big that he makes all his parts himself on purpose to build up an accessory trade, adapts his design to take standardised electric starting and lighting sets, standard lamps in the dash or radiator or wings, and standard all sorts of things that every little English maker of a few hundred cars a year has made specially for him at needless expense.

ON DECREASING OUTPUT.

I am completely at one with "Ornis" on his objection to changing any type of fitting for anything which is only "about as good as before." Too much of this sort of thing has been done already in both Services, just to amuse somebody or other "dressed in a little brief authority"—and, I regret to say, a good many changes have been towards things only about as bad as before or even worse, as witnessed by the re-alterations in the alterations in the corrections to the original B.E.2c. drawings and the final decision to let certain fortunate firms "build the damned things any way you like, but build 'em."

On the other hand, too many difficulties have been placed in the way of firms or individuals who have wanted types or systems altered so that output would be increased. For example, in some Government departments whence orders are issued for aircraft or aircraft parts it is the custom to insist on the completion of one order before another is issued, and it seems impossible to make the young officers responsible see that this means holding up deliveries to their own particular Service.

FACTORY OUTPUT.

Suppose a firm has a dozen machines of a certain type to build, naturally the raw material for that dozen has to be bought—plus an allowance for rejection of parts by inspectors. If there is a delay in getting the stuff the whole factory stands idle. Then when the stuff comes in the machine-shop and woodworking-shop get to work on it. As the first batch comes through those shops the fitters and erectors take it along, but the assembling-shop has been idle all the while. At last the first machine is assembled, tested, and handed over to the Government. By that time the machine and woodworking shops have probably turned over all their worked-up material to the fitters and erectors, and unless a further order is given on the performance of the first machine, these shops have to stand idle till the twelfth machine is delivered and a new order is sent along.

By that time probably the men have left because the firm cannot pay them for doing nothing, or because the firm's own work can only keep them on short time,

when they can draw overtime for six hours a day in another branch of munition work. All these hands have to be replaced when the new order comes along, and one can bet that they are not coming back at their old pay after their first experience.

The consequence is that the wages bill goes up without an increase of output, and the price of the machines goes up with it, because the men have to make enough while at work to keep them while idle, and the firm has to do the same, so the Government has to pay for the idle time in the end. And all the while, for the same cost in money and by the expenditure of a little common—or perhaps I should say uncommon—sense in Government offices, the continuity of output might be assured.

A SIMPLE SOLUTION.

It may be that a firm has an order for a dozen machines of a special type and that the Service wishes to test these thoroughly before ordering any more. It should be quite easy to give that firm a standing order to make school machines whenever work on its special types slackened off. Maurice Farmans, Short pushers, or Caudrons might be made a kind of standing side-dish for every firm at which their shops could have a cut whenever work on special stuff slackened off either owing to lack of orders or difficulty in getting special material. Then the personnel of every shop would be kept together, and everything would be in condition for the rushed production of special types when the orders arrived.

It is a very simple business proposition, and I hope that any works managers who have suffered from their shops being held up pending the issuing of orders will simply draw the attention of the responsible officers to this note, because actually all these officers want all the machines they can get; but as they have never had a business training, this cause of the trouble and the way out has probably never struck them.

WASTED TIME.

If the time which has been wasted in the past twelve months through men standing idle waiting for special material or for fresh orders had been usefully expended

on standing orders for school machines, we should have had thousands of such machines in stock and at work by now, and the training of new pilots would have gone forward correspondingly.

It is no use standardising everything to a ten-thousandth of an inch if all the standardisation is going to do is decrease output.

Many of the aeroplanes we produced before the war were better in many ways than those of the Germans because they were the product of personal initiative. Since the beginning of the war our aeroplanes have not improved a bit, except in one or two isolated instances. The reason is that Government interference has substituted standardisation of the wrong sort for original work, and immature exponents of an inexact science have been permitted to control the output of men who know their business from practical experience—I refer impartially to both Services.

To-day, several French makers are a year ahead of our aeroplanes, on performances officially controlled, simply because they have been allowed to use the brains that God gave them instead of being subjected to the

domination of a self-estimated omniscient being whose only object of worship is a slide-rule which is probably no more and no less efficacious than a Buddhist prayer-stick.

OUR PRESENT LAMENTABLE POSITION.

Thanks to unpractical standardisation it would take the British aircraft industry a year at least to pick up the lost position it might have held by this time ahead of the German and French industry, even if it were set going on the best possible lines at once, and so far as I can see there is now less prospect of its being immediately set on those lines than ever there was. True, I have hopes of the Admiralty under the new conditions, and even the War Office seems to have had glimmerings of light at intervals during the past six months, but many idols must be dethroned and many usurpers deposed before we can hope for things to be done as they ought to be.

So much I commend to the attention of "Ornis" and his friends. There are still some few remarks of his on the subject of varieties of types of aeroplanes to which I hope to refer at a later date.—C: G. G.

THE INVASIONS OF ENGLAND.

We are certainly a curious country, and perhaps our special genius is for doing the right thing in the wrong way. I suppose I ought to feel highly pleased that one of my pet aversions, the Press Bureau to wit, should have apparently taken my advice so promptly. In the issue of *THE AEROPLANE* which appeared on Thursday, September 15th, I pointed out that if some of the minor tragedies of the Zeppelin raids were plainly and forcefully told they might bring home to the British shirkman the fact that the issue of the war depended on him as well as on the Navy and Army. On Friday, September 16th, the Press Bureau actually issued a document on those precise lines, telling the British Public not quite as much as some friendly Dutchman had already told the people of Germany—just as I said someone would do. For such small mercies, at any rate, let us give thanks, for they indicate unexpected intelligence.

As for the information which reached Germany, the *Morning Post* makes the following pithy remarks:—

"From a Dutch source the *Kölnische Zeitung* has at last received something like a descriptive narrative of how London fared on the night of the last raid, and how the Londoner 'took it.' Unfortunately, the observer was not actually in town, but had to content himself with a view from one of the suburbs. . . . Unfortunately, we cannot for obvious reasons accompany the observer on his visit to the damaged districts the next day. Enough that his descriptions are for the most part accurate and not exaggerated. His final word is that the thousands who wandered about the streets with him 'seemed to realise that with the advent of the airship our British insularity was not quite so secure nowadays as it had been in times past.' But, being an unbiased observer, he does not record any sign of public perturbation on that account."

One may accept our excellent contemporary's statement that the descriptions are "for the most part accurate," and it is a pity that pressure on space or the Censorship—probably the latter—prevented the "Post" from accompanying the Dutch "observer" (a pretty euphemism) on his visit to the damaged districts. Much might have been learned by British readers as to what really happened, and what a neutral observer saw:—

Presumably everybody has read the Press Bureau's well-meant effort, so it is unnecessary to reproduce it in full,

but the actual "minor tragedies" described deserve to be placed on record. These read as follows:—

1. Somewhere in the area of London you can go to the corner of a little street; this one has a public-house at the corner. Outside it on Wednesday evening last, after the place was closed, a man and a woman were talking. The woman went off to buy some supper at a neighbouring shop; the man stood there to wait for her, and while he was waiting there fell at his feet the first of the explosive bombs. It killed the man outright; it blew pieces of paving stone on to the surrounding roofs; it blew in the front of the public-house, reducing the stock to a mere mass of broken glass, over which still floats an indefinable odour of assorted forms of alcohol; it took off the top of a grand piano on the floor above, twisted the iron bedsteads, injured a woman who was sleeping there, and reduced what had been the carefully-kept living rooms of a small family to a mass of soot and dust and plaster and broken glass. In what conceivable respect did it contribute to the progress of the war? [The moral appears to be "Don't stand outside pubs. Get well inside"—Ed.]

2. In another part of the area over which the airship passed there is a big block of workmen's dwellings—places where men live who are away at their trades all day and often all night, and which, day and night, are crowded with children. A bomb dropped on the roof of one of these, and right under the roof was a little flat in which four children had been put to sleep. Two of them, after being put to bed, had got up surreptitiously to make tea in an adjoining room; you can see the bed that they left, now a mass of blackened and charred sheets, with the mattress torn to pieces. They escaped by a miracle, but in the small bed-room next door to them the other two children were killed in an instant. These buildings are strong; and the bomb did not penetrate far; you would hardly notice the damage to the roof if you pass it in the street. That was all that was happening when the captain of the German aircraft professed to think he was visiting the docks and vitally damaging the Port of London.

3. In another place a bomb dropped through the roof of a stable yard; it was an incendiary bomb, and it set on fire a motor-car on which it fell. The stableman and his wife, in spite of the fire which was immediately serious, set out to rescue the eleven horses which were in the stable behind the fire, and they were carefully taken out one by one and let loose in the street. A dog which was kept to guard the premises was also carefully rescued; so was a caged bird kept on the first floor above the fire, though whilst she was bringing it down the stableman's wife was blown off her feet on the stairs by the blast of an explosive bomb which fell in a neighbouring courtyard. The only casualty in this case was a bantam cock.

4. In such a case as the last the futility of the enemy's attack was merely ridiculous; in others it was tragic. Somewhere in the vast area of London's suburbs there is a little block of houses, standing almost by itself, and divided up into small flats. On the ground floor there were sleeping a widow, her daughter, aged eighteen, and a young man whom they kept as a lodger. On the first floor was a family with three children, two of them girls; and on the second floor a working man and his wife with five children, four of them girls and one a boy. The bomb dropped

SOME NEW PILOTS.



FROM THE BEATTY SCHOOL:—(1) A. Boyesen, Certificate 1657; (2) H. B. Robb, 1565; (3) F. W. R. Banks, 1517; (4) P. A. Johnston, 1309; (5) E. A. King, 1556; (6) W. L. Eaton, 1608; (7) P. V. Fraser, 1239; (8) J. F. Roche, 1234; (9) G. K. Blandy, 1336; (10) G. L. Rutherford, 1569; (11) Y. K. Leong, 1215.
 FROM THE HALL SCHOOL:—(12) C. H. Bell, 1613; (13) J. W. Gordon, 1558; (14) E. C. Jowett, 1626; (15) C. Booker, 1535; (16) J. R. Philpott, 1536; (17) E. J. Furlong, 1426; (18) J. G. K. Mason.
 FROM THE RUFFY BAUMANN SCHOOL:—(19) Norman Wallis, 1599; (20) G. P. S. Robertson; (21) J. B. Fitzsimons, 1549; (22) G. H. Dixon, 1480; (23) M. G. Phillips, 1659; (24) P. A. F. Belton, 1699; (25) W. B. Young, 1701.

squarely on the roof of the house. As the labourer and his wife who were on the second floor described it, the whole partition wall beside their bed gave way and disappeared; the man pushed his wife out into the centre of the room and went off to find his children. Two of them, who slept in the room under the spot where the bomb fell, had vanished with room, bed, and everything, and their bodies were found two days later under the debris of the house. Of the others, the boy, aged eight, ran for safety to the staircase, which was blown away, and in the dark fell down the hole where his sisters' bodies were buried in the ruins. Of the first floor inhabitants two were missing altogether, and their bodies were subsequently recovered. Of the ground floor, where apparently the worst effect of the explosion took place, it is sufficient to say that part of the body of the man who occupied it was found one hundred and fifty yards away.

5. A bomb dropped in the street blew in the front of a shop, but spent the main force of its explosion on a passing motor-bus. There were twenty people on board, including the driver and conductor. Nine of them were killed and eleven injured, amongst the injured being the driver, who had both his legs blown off and died shortly afterwards in hospital.

These incidents alone account for nearly half the deaths which have been caused. They will suffice to show what is the real measure and nature of the success which has attended the enemy's attack on the London area.

In human life and limb, the net results of the week's raids in the London districts were 38 killed or died of wounds and 124 injured.

It ought not to be omitted from mention that two policemen and one Army Service Corps man appeared amongst the casualties; otherwise no person in uniform was either killed or injured.

The style of these reports recalls in some measure that of Colonel Swinton, D.S.O., R.E., lately the "Official Eyewitness" in Flanders, whose articles were the one oasis in the journalistic wilderness of the London Press during the middle part of the war, and whose appointment to a Staff job at home has deprived us of one of the joys of life. But the style is rather that of a tired and slightly bored "Eyewitness" than of "Ole Lukoi" of the "Green Curve" and "The Joint in the Harness." Nevertheless, they are much better than the usual ostrich-like attitude of the Press Bureau. The stern view of the Press Bureau may be salutary, but it is quite a pleasure to find that it really has a head and one which is even threatened with intelligence.

My chief quarrel with the communiqué is that it repeats the old foolish pliant about "non-combatants of a kind which it has been hitherto the honourable practice of civilised warfare to exempt from attack." Has anybody ever bleated in previous wars about the starvation of women and children in besieged cities, or about their being hit by shells intended for "points of military interest"? The besiegers have felt sorry for them, but that is all. Read "The Green Curve" if you want to know something about the position of non-combatants in real warfare. If Londoners have been slaughtered it is our own fault for not having super-Zeppelins and adequate anti-aircraft guns and searchlights. The little list of tragedies is the finest possible impeachment of those whom a displeased Providence has set in authority over us.

It must be quite a year since I set forth fully in this paper a workable scheme for search-lights and air mines, and if that advice had been taken the enemy's airships would certainly never have got as far as they did.

Furthermore, the following phrase is a cheap sneer unworthy of an official document:—

"It is true that two hospitals narrowly escaped damage, but it is only fair to say, on behalf of the officers of an Army which has done its best to destroy the cathedrals of Belgium and France, that up to the present they have only succeeded in hitting one church."

Ask any gunner officer, French or British, how long he will leave any church tower standing if it seems to afford a good observation post overlooking his own

lines. How many French artillerymen in Northern France have prayed for forgiveness, have shed some few tears over the destruction of a beautiful and sacred edifice, and have then proceeded to blow a church to pieces with soldierly thoroughness? It is all the fortune of war. Perhaps if we had had more kite-balloons early in the war some French churches might have been spared, for, after all, there are many Catholics in the German Armies, so there can be no hatred of churches as churches, as was the case with one Oliver Cromwell, Protector of England, who happily had no high explosives with which to carry out his conscientious objections.

However, taking it all round, the Press Bureau, or whichever Government Office controls it in this matter, may be congratulated on the dawn of intelligence.

C. G. G.

The Press Bureau issued the following statement on September 14th:—

A Zeppelin visited the East Coast last night (September 13-14). Bombs were dropped. Anti-aircraft guns, fixed and mobile, were in action.

So far as can be ascertained, there were no casualties and no damage has been done.

Three further cases of injury caused by the aeroplane which visited the Kentish Coast yesterday have been reported, making a total of seven—one man and six women injured, two of the women seriously.

It is reported that Count Reventlow is responsible for the following words of wisdom in the "Deutsche Tageszeitung." No one can now say that humour is lacking in Germany:—

"The appointment of Sir Percy Scott to the charge of the gunnery defences of London is proof of the tremendous damage done by our attacks. It is ridiculous to say that these attacks are made in order to terrify the population. London is a fortress. The proper thing to do, and a military matter, of course, is for the British Government to give Admiral Scott the status of Fortress Commander of London.

"Yes, they ought to have done so a year ago. Then, Sir Percy Scott should order the whole of the civil population to evacuate the fortress district of London. This, of course, would mean the exodus of some millions of inhabitants, but with their well-known communal feeling they would quickly effect the evacuation. Certainly, we should be only too glad to see Londoners in this way enjoying the hospitality of the numerous charming residential districts of Great Britain until the end of the war. In any case, the Germans are not to blame for any results of the fact that the now frequently attacked Fortress of London has not evacuated its civil population. On grounds of humanity, civilisation, and international law this is a great neglect on the part of the Government of Britain."

The London County Council announces, with regret, that J. S. Green, a member of the London Fire Brigade, who had been lying in hospital in a critical condition owing to injuries received at fires caused by the dropping of bombs by hostile aircraft, died on September 17th. Green assisted to rescue several persons, and subsequently entered a burning building where it was reported that two persons were cut off on the second floor. On reaching that floor, a gas explosion occurred, which burned him severely, and, escape being cut off, he jumped out of the window.

Two other members of the Fire Brigade have been seriously injured. Fires have in no case been permitted to spread, and the Fire Brigade have nearly always kept the outbreaks to the buildings in which they originated. So far as can be ascertained, 28 civilians were rescued by men of the Brigade.



ERNEST B. H. LANDER, 1905.

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Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," September 14th, 1915.

ADMIRALTY, September 8th.

TERMINATIONS.—Temp. commn. of Sec. Lieut., R.M. (Hon. Capt., R.M.), A. D. Isaacs is terminated on appt. to R.N. Air Serv. August 25th.

WAR OFFICE, September 14th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—August 23rd : Sec. Lieut. J. P. C. Sewell, S.R.; Sec. Lieut. E. A. Lieut. N. G. Smith, H.L.I., and seconded; Sec. Lieut. B. C. McEwen, S.R.

MEMORANDA.—A. J. Insall to be temp. sec. lieut. for service with Royal Flying Corps, March 12th. (Substituted for notification in "Gazette" of April 12th, under S.R., Royal Flying Corps.) C. T. Cleaver to be temp. sec. lieut. for service with Royal Flying Corps, June 21. (Substituted for notification in "Gazette" of July 6th, under Special Reserve, Royal Flying Corps.)

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) F. Hudson confirmed in rank. To be sec. lieuts. (on prob.): C. E. Holaway. August 16th. D. Brooks. August 26th. D. Cleaver. August 28th. W. G. Pender. August 30th.

* * *

From the "London Gazette," Supplement, September 15th, 1915.

WAR OFFICE, September 15th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers. August 26th : Sec. Lieut. G. W. Withington, Norfolk, and seconded; Sec. Lieut. F. Hudson, S.R.; Sec. Lieut. J. A. W. Bourne, S.R. August 30th. Sec. Lieut. R. G. Burder, A.S.C., S.R. September 1st.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—P. E. L. Gethin to be Sec. Lieut. (April 1st).

* * *

From the "London Gazette," September 17th, 1915.

ADMIRALTY, September 15th.

Lieut. this day promoted to rank of lieut.-com. J. W. Seddon.

WAR OFFICE, September 17th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Sqn. Com.—Capt. D. G. Connor, R.A., from an eqmt. officer, and to be temp. maj. whilst so employed. September 2nd.

Flying Officers.—Sec. Lieut. E. P. Plenty, Manchr., and seconded. August 30th. September 4th : Lieut. D. M. King, R. of O.; Sec. Lieut. A. R. Tillie, Scot. R.; Sec. Lieut. L. Moss, A.S.C.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) J. A. W. Bourne confirmed in rank.

To be sec. lieuts. (on prob.): W. D. M. Bell. August 15th; H. A. Johnston. August 27th. C. F. Pittman. September 1st.

* * *

From the "London Gazette," Supplement, September 18th, 1915.

WAR OFFICE, September 18th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of L. E. M. Hayes to sec. lieuty. in "Gazette" of August 16th cancelled as from September 4th. C. H. Morgan to be sec. lieut. (on prob.). July 7th.

* * *

From the "London Gazette," Supplement, September 20th, 1915.

WAR OFFICE, September 20th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Sgt.-Maj. W. Thomas to be Qmr., with hon. rank of Lieut. August 29th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) C. W. Willcox confirmed in rank.

To be Sec. Lieuts. (on prob.): H. B. T. Childs. September 1st. T. W. Webb. September 6th. F. W. Day to be Sec. Lieut. (on prob.) August 17th.

NAVAL.

The following appointments were notified at the Admiralty on September 14th :—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated : Leadg. Mechanic B. R. Lee, September 12th; Messrs. H. W. Mortimore, A. H. Curtis, E. M. King, C. D. Booker, and H. G. Hall, September 18th.

Mr. W. Higginbotham granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for inspection duties in R.N.A.S., to date September 13th.

Mr. A. G. T. Applin granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date September 13th.

* * *

The following appointments were notified at the Admiralty on September 16th :—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut.-Com., R.N.V.R., Snowden Hedley, entered as actg. flight lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date September 14th. Temp. commission and appointment as lieut.-com., R.N.V.R., terminated.

Mr. C. C. Hore granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," for R.N.A.S., to date September 15th.

Flight Sub-Lieut. (temp.) G. H. Beard transferred to the permanent list for R.N.A.S., to date September 15th.

Acting Warrant Officer, 2nd Grade.—S. R. Gellett, to the "President," additional, for R.N.A.S. (September 15th).

The following Probationary Flight Sub-Lieutenants have been confirmed in rank with original seniority, and reappointed to the "President," additional, for R.N.A.S., to date as stated :—R. A. Reid (temporary) (March 25th); J. O. Davis and W. H. Campbell (both May 7th); G. G. Ommanney, D. Gill, P. C. Douglas (temporary), H. F. Mills (temporary), and O. Butcher (temporary) (all May 28th); W. H. S. Sharpe, B. Gregg, and S. Bell (all June 26th); H. S. Bompas, R. W. Lane, and J. H. D. Grant (all July 5th); J. Wann, T. F. Morris, W. P. D. Scott, H. D. Hyde (temporary) (all July 7th); E. A. O. Auldjo-Jamieson and S. O. Smith (both July 8th); A. T. Moore (July 13th); N. E. Stirling (August 15th); M. G. Gill (August 7th); A. C. B. Geddes, L. Radmore, C. R. Carr, and P. Laing (all August 10th).

* * *

The following appointments were notified at the Admiralty on September 17th :—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieut., R.N.V.R., R. H. Horniman entered as prob. flight sub-lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date September 16th.

* * *

The following appointments were notified at the Admiralty on September 18th :—

ROYAL NAVAL AIR SERVICE.—Mr. E. S. Hunt granted a temp. commn. as sub-lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date September 17th.

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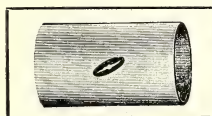
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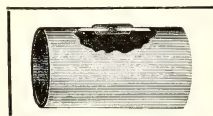
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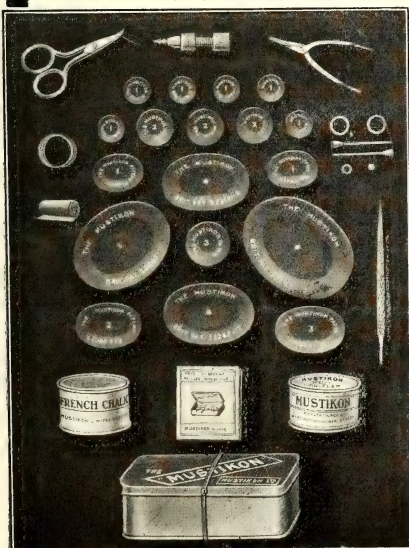
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The undermentioned have been entered as probationary flight sub-lieutenants for temp. service and appointed to the "President," additional, for R.N.A.S., all to date September 17th:—R. E. Darnton, H. Field, and H. J. T. Saint.

* * *

The following appointments were notified at the Admiralty on September 20th:—

ROYAL NAVAL AIR SERVICE.—The following entries have been made:—

Temporary Lieutenant-Commander (R.N.V.R.).—I. Fraser, as Acting Flight Lieutenant, for temporary service, with seniority of September 15th; and appointed to the "President," additional, for R.N.A.S.

Temporary Sub-Lieutenant (R.N.V.R.).—A. Handley, as Probationary Flight Sub-Lieutenant, for temporary service, and appointed to the "President," for R.N.A.S., temporary commission and appointment as Sub-Lieutenant (R.N.V.R.) terminated (September 17th).

Mr. F. A. R. Malet, as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of September 18th; and appointed to the "President," additional, for R.N.A.S.

* * *

The "Court Circular" of September 16th says:—

"Rear-Admiral Mark Kerr had the honour of being received by his Majesty."

[Admiral Mark Kerr has been in command of the Greek Navy for some three years, having been lent to Greece to reorganise that country's naval service. He has recently been very seriously ill, and one hopes that his return to this country will restore him to complete health.

Admiral Kerr took his aviator's certificate on a Sopwith seaplane some 18 months ago, and he is the senior officer of either Service who holds a certificate. Moreover, up to the time of his illness he flew as frequently as circumstances permitted, not merely as passenger, but handling the machine himself and generally alone. He has therefore more practical experience of flying than any officer of his age or rank.—Ed.]

* * *

The Secretary of the Admiralty announced the following casualty on September 14th:—

KILLED.

Flight Sub-Lieut. Gerald W. Hilliard, R.N. (September 5th).

Flight Sub-Lieut. Gerald W. Hilliard, R.N., was gazetted to the Royal Naval Air Service in January, his seniority being dated January 4th of this year.

It is said that he was killed owing to the bombs on his machine exploding when he was landing in the dark.

* * *

The Secretary of the Admiralty announced the following casualties on September 15th:—

KILLED.

Flight Sub-Lieut. Macfie Keith Johnston (September 12th).

Flight Sub-Lieut. James Morrow Alexander (September 12th).

[The accident which caused the death of these two young officers was described last week.—Ed.]

The funeral of Flight Sub-Lieuts. Macfie Keith-Johnson and James Morrow Alexander, R.N.A.S., took place at the Isle of Sheppey cemetery with naval honours. Admiral Sir George Callaghan, Commander-in-Chief at the Nore, attended, with a large number of officers and men of the Royal Navy and Royal Naval Air Service. The Army was represented by a detachment from the Rifle Brigade. The Rev. F. D. Windors, of Felstead, officiated.

* * *

The Secretary of the Admiralty announced the following casualties on September 18th:—

INJURED, SEPTEMBER 15TH.

Jones, Flight Lieut. R. Hilton, R.N.

Croucher, Flight Sub-Lieut. William, R.N.

* * *

The Secretary of the Admiralty announced the following casualty on September 20th:—

DIED.

Flight Sub-Lieut. William Croucher, R.N. (Sept. 18th).

* * *

A fatal accident occurred on September 20th at an air station in Kent. Miss Ivy Myrtle White, aged 15, was shown over the large wooden shed by a sailor friend. They went to the top of the shed to have a look round, and in descending a steep ladder Miss White lost her hold, and fell about 150 feet to the concrete floor. She was killed on the spot.

[This looks like a case for a court of enquiry.—Ed.]

* * *

The following appeared on September 17th:—

WILLIAMS—GOLDEN.—On September 17th, at the Parish Church, Shalford, Surrey, Oswald Clutterbuck Williams, Royal Naval Air Service, elder son of G. Williams, Bristol, to Lilla, youngest daughter of the late John Golden and Mrs. Golden, The Crib, Guildford.

* * *

A marriage is arranged between Squadron Commander John Tremayne Babington, R.N., D.S.O., Legion of Honour, Royal Naval Air Service, and Cecily, youngest daughter of Mr. Beresford Hope and the late Mrs. Beresford Hope.

* * *

A member of the Kite Balloon Section of the R.N.A.S., writing to a friend in London, says:—"We have not been working long, but already the balloon has gained quite a reputation. Very little of particular interest to the individual happens, though one day we showed the Germans what we could do if they became at all personal. The balloon was up at about 2,900 ft. and they started heaving large souvenirs at it—fortunately very short. At the third shot the observers in the balloon located the flash and turned on one of our heavy batteries. The battery opened fire smartly, ranged by the balloon, and blew the offending gun to kingdom-come. They have never attempted to interfere with us again!

"On another occasion three big Boche machines came over to look for the local 'Mother.' Two or three B.E.2c's which were patrolling the neighbourhood engaged them—at long range to keep clear of the efforts of our own 'Archies,' whose shells were bursting all over the sky. One dud failed to burst completely and the case fell in a field next to the camp. Of course, we all imagined it was a bomb from one of the Germans, and more imaginative ones had visions of the balloon being dashed to earth in a cloud of smoke, etc. However, after dropping a couple of bombs on a place about a mile away the party withdrew.

"I have heard that during the past week no fewer than 21 fights in the air took place, resulting in 11 German aeroplanes being driven to the ground. The R.F.C. were complimented by G.O.C.B.E.F. for the week's work."

MILITARY.

The Court Circular of September 14th dated from Buckingham Palace says:—

Field-Marshal the Earl Kitchener of Khartoum, Secretary of State for War, had an audience of the King to-day, and Major-General Sir David Henderson, General Officer Commanding Royal Flying Corps, Military Wing, had the honour of being received by his Majesty.

* * *

The "Court Circular" of September 17th, dated from Buckingham Palace, says:—

The following officers had the honour of being received

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by the King this afternoon, when his Majesty invested them with the Insignia of Companions of the Orders into which they have been admitted :—

The Distinguished Service Order :—Captain A. E. Borton, the Black Watch, Royal Highlanders, attached Royal Flying Corps; Captain A. Marshall, 28th Light Cavalry, Indian Army, attached Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on September 20th under date September 15th :—

MISSING.

Mulcahy-Morgan, Capt. T. W., R.I. Fusiliers, att'd. Royal Flying Corps.

Captain Mulcahy-Morgan distinguished himself soon after trench warfare began in Flanders by taking part with two other officers in an attack on eleven German aeroplanes which tried to bomb Dunkirk. The three successfully drove off the eleven. Major Holt, the senior officer, received the D.S.O.

* * *

The subjoined casualties among the Indian Forces were officially reported on September 20th under various dates :

WITH THE EXPEDITIONARY FORCE.

Previously officially reported Missing, now unofficially reported Killed.

Braddyll, Lieut. E. C., 10th Lancers, att'd. Royal Flying Corps.

PERSIAN GULF.

MISSING.

Atkins, Capt. B. S., 11th Rajputs, att'd. Royal Flying Corps.

* * *

The obituary notices of September 15th contained the following :

BRADDYLL.—On September 6th, killed in France, Lieut. E. Clarence Braddyll, 10th Lancers, attached Royal Flying Corps. Loved by all who knew him. Born October 18th, 1887.

Lieut. Edward Clarence Braddyll was educated at Charterhouse and Sandhurst. He obtained his commission in the Indian Army in March, 1908, and last September he was gazetted to the Signalling Service. Since he went to the front he had done splendid work. For a time he was attached to the Royal Engineers, and afterwards volunteered for service with the Royal Flying Corps.

* * *

The message received from Field-Marshal Sir John French on September 15th contains the following references to airships :—

(2) Three hostile aeroplanes have been brought down within the past four days; of these two were hit by our anti-aircraft guns and fell in the German lines. The third was shot down by one of our air pilots and fell in our lines. The hostile machine was only slightly damaged, but both pilot and observer were killed.

(3) During the past week there have been 21 air-fights over the German lines, and in eleven cases the hostile aeroplane was driven to the ground.

(4) On September 10th our artillery, assisted by aeroplane direction, bombarded two German observation balloons located east of Ypres; one balloon was burst, while the second was deflated and removed.

* * *

The following appeared in the "Times" on September 17th :—

CARMICHAEL.—SMELT.—On September 14th, 1915, at the Parish Church, Hampstead, by the Rev. Henry J. C. Smelt, uncle of the bride, assisted by Canon Deane, Vicar, Major G. Carmichael, D.S.O., Royal Flying Corps, son of Lieut.-Col. Carmichael, to Kathleen Mary, youngest daughter of Mr. and Mrs. W. Casterton Smelt, of Braeside, Rosslyn Hill, Hampstead.

The "Times" correspondent writing from British Headquarters on September 15th says :—

To-day one of our officers succeeded in bringing down a German battle-aeroplane of new type and in killing both the pilot and observer.

The German machine was reported flying in a westerly direction at about 7 a.m. One of our machines immediately went up to engage it and a magnificent duel in the air was fought out.

Both machines were armed with quick-firing guns, but, although the German was the larger aeroplane, our pilot out-maneuvred his adversary and riddled both his water and his petrol tanks. The disabled German machine recovered when it had almost come to earth and managed to fly up again in a westerly direction. Still our fire continued, and then the German machine gave a final plunge and fell into a ploughed field.

The German aeroplane was of the single-fuselage and single-propeller type, but one peculiarity of it was that the seats were made on the swivel pattern, like piano stools. The machine, curiously enough, was very little damaged by its fall, and can easily be repaired and used by us. The British aeroplane was altogether undamaged.

[Another report states that a second machine was brought down the same day.—Ed.]

* * *

An R.A.M.C. Territorial on active service writes :— "German aircraft seem to be waking up a bit in these parts and show themselves quite frequently compared with their rare appearances a couple of months ago. One dropped a note near here the other day asking for news of two of their missing aviators and giving news of two of ours who had been captured.

"One of their Albatrosen got very severely strafed by a B.E. the other day. (A B.E. mark you!) Don't you think the Albatros ought to be jolly well ashamed of itself?

"One watches in vain for the bi-fuselaged and much vaunted Fritz.

"We are trying to get up a young Sports Meeting for to-morrow (Saturday), and are going to give a concert in the evening, so we are making the best of a slack time."

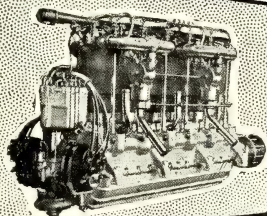
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The following letter from Gunner Bodkin, R.H.A., which appeared in the "Morning Post," is of interest :—

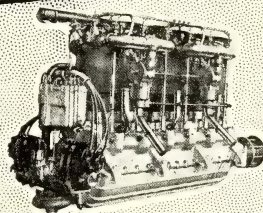
"Our work is to prevent them (the German aeroplanes) seeing too much, and if they do see anything we stop them from getting back with what they have seen. The worst of it is that if we get shelled we cannot retaliate. The other day, for instance, we had five 'planes over at once. We only saw three, and promptly engaged them, while two others, which mounted very high, marked our positions to the German artillery, which promptly opened fire with high explosives on us. Then they circled round and started dropping bombs on us. But we kept our end up, and didn't get out of it until we had brought the three machines down.

"Last Sunday we opened fire on a German Albatros machine which came over high in the sun. We plugged away at him, and hit him twice, once in his petrol tank and again in the radiator. He started to plane down and nearly collided with an English 'plane, which came out from behind a bank of clouds. It was a glorious sight the way they circled round, but it was a foregone conclusion as the German could not climb. His observer was killed by the machine-gun fire of the Englishman, and the pilot came right down, but he opened fire against a company of infantry who were rushing forward to capture him and prevent him setting fire to his machine. So, of course, they had to fire on him. I was a bit sorry, as he had made a splendid fight, and he deserved his life for his pluck. Though they are our enemies we can't help admiring a brave man—we see so few among the Germans."

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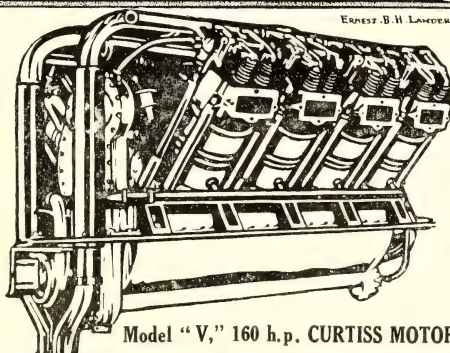
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FRANCE.

The Ministry of Marine issued the following communiqué on September 17th:—

Our squadron of hydravions at Port Said bombarded the bridge at Chekaldere, which constitutes an important passage. A squadron of hydravions in the Adriatic attacked and dispersed some hostile machines, which were supported by small vessels carrying anti-aircraft guns.

* * *

The communiqué of September 18th says:—

East of Chaillon, north-east of St. Mihiel, a captive German balloon was brought down. Before St. Mihiel our artillery cut the large bridge, a bridge of boats, and three foot-bridges.

* * *

The afternoon communiqué of September 19th says:—

In the region of Berry-au-Bac and in Champagne, to the north of the Camp du Châlons, there was marked activity on both sides. A German anti-aircraft battery was last evening put out of action to the east of St. Mihiel.

* * *

The evening communiqué of September 19th says:—

Near St. Mihiel, a German aeroplane, surrounded by our shrapnel fire and attacked with machine-gun fire by one of our machines, disappeared suddenly into its lines.

* * *

It is reported from Paris that great significance attaches to the appointment, confirmed on September 14th at a Cabinet meeting, of an Under Secretary attached to the Minister of War for the Department of Aviation and Aeronautics. The office has been confided to M. René Besnard, a prominent member of the Radical Socialist group, who was Labour Minister in the third Briand Cabinet.

The professional head is General Hirschauer, but this recognition of the service is notable, not only because the special Ministerial office thus created proves the past services of the air fleet, but, as is generally admitted, it indicates still further activities from the now enormously increased aerial forces of the Allies.

It may be remembered that some months ago this paper suggested that Mr. Churchill should be made First Air Lord of the Admiralty, a post which would be analogous in our Navy to that of M. Besnard under the French War Office. The arrangement would be in order because in France the Army is the main defending force of the country, and in Britain the Navy is the main defence.—Ed.]

M. Besnard, in an interview which he granted to the "Matin" on September 15th, said:—"French aviation has heroically justified the confidence that was placed in it by those who have fought so hard for it. Why is it that there are among those some who, like Senator Raymond, to whom my memory pays tribute as a glorious soldier and heroic victim, cannot be with us to witness the development of the work which they loved to the extent of the greatest sacrifice of all? It is with the memory of the fine example that he gave, and others are giving every day, that I wish to act with all my strength and soul to organise and collect without cessation or relaxation the manufactures and the matters requisite for the air service. This is the reason for my appointment, and I shall fulfil my duties, for I am sure that in aircraft we find an instrument essential to our certain victory."

GERMANY.

The communiqué of September 14th says:—

Hostile aeroplanes dropped bombs on Trier (Treves), Moorchingen, Château-Salins, and Donaeschingen.

Near Donaeschingen a passenger train was attacked by a machine-gun, some persons being killed.

An aeroplane of the squadron operating over Trier

was shot down near Lommerringen, south-west of Fentsch.

During the night bombs were dropped on the railway station at Lida.

* * *

The communiqué of September 18th says:—

Hostile ships which appeared off Dunkirk were checked by our aviators and a destroyer was hit.

* * *

The communiqué of September 19th says:—

The Minister for Marine, Mr. Balfour, declared in the English House of Commons that London, as was perfectly plain to everybody and as was known to the Germans also, is an unfortified town, which therefore ought not to be exposed to aerial attacks, according to the rules of civilised warfare. As the Minister cannot possibly be ignorant of the fact that London is fortified with a great number of powerful fortifications, and a still greater number of fieldworks, there is question here of a deliberately false representation.

The Minister has furthermore forgotten to mention that the German airships were always bombarded by the English previous to their appearance over London. Neither does he mention the fact, which is very important for the right judgment of the state of affairs, of the continuous attacks by aeroplanes of the Allies on open German towns situated far outside the area of military operations, and even on harmless travellers in passenger trains, who are naturally not in a position to defend themselves.

* * *

The Central News correspondent at Amsterdam says:—

In the air raid on Treves (the local Press says) 15 to 20 Frenchmen took part. About 30 bombs were thrown, apparently aimed at the station. One bomb hit the platform and wounded a postman. Ten bombs exploded in one street.

In the cathedral the induction of a new priest was taking place. The clergy proceeded to the crypt, where prayers were said until the danger had passed.

The French aviators flew at a great altitude; the anti-aircraft guns could not reach them.

The raid took place at 8 o'clock; at noon some aviators returned to note the damage.

* * *

A neutral just returned to Berne from Alsace has informed the Swiss representative of the "Morning Post" that the damage done at Metz by the French aviators was serious, although the extent cannot be ascertained. The Germans report 17 persons injured, of whom 3 have since died. Owing to the frequency of aerial raids in Alsace lately the inhabitants are making bomb-proof holes in the ground for protection.

* * *

It was announced from Amsterdam on September 15th that the First Class Iron Cross is to be conferred on the German aviator who killed Pégoud.

[Which is something of a compliment to poor little Pégoud's memory.—Ed.]

* * *

It was reported from Holland on September 15th that a German airship descended, which was severely damaged by the fire of Russian guns, near Königsberg. Probably this ship was in the air attack on the Gulf of Riga.

* * *

The following exciting, if somewhat steep, narrative comes from Paris via Switzerland describing the raid by two French aviators on the railway from Donaeschingen to Villingen, in Baden:—

"Eye-witnesses relate that the aviators, sighting a troop train while they were manoeuvring at a very low altitude, swooped down to within 12 to 15 feet of the ground. One flew on the right of the line and the other on the left

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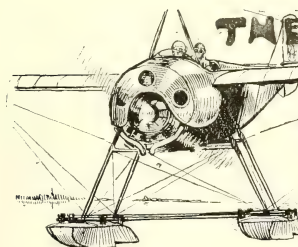
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alongside the train, and opened fire with machine guns through the windows of the carriages upon the Germans. The German authorities evidently considered that there was no risk of a raid at a point so far from the frontier, for there was not a single cartridge among the troops.

"Again and again the aviators flew up and down the train, killing the stoker and many soldiers. Others jumped from the train while in motion and flew for shelter. The attack ended at Marbach Junction, where the raiders fired into the ranks of the German soldiers drawn up on the platform, causing heavy loss."

RUSSIA.

It was reported from Vilna on September 17th that bomb-dropping Taubes and Albatroses are constant visitors. Three were brought down recently.

* * *

It is stated, via Amsterdam, that German aviators report that Riga has the appearance of a great artillery park. As soon as a German aeroplane is sighted hundreds of guns open fire, and it is now almost impossible to drop bombs on Riga or even to reconnoitre with any success. [Which seems to show that the Russians learn their lessons quicker than the English.—Ed.]

AUSTRIA.

The communiqué of September 20th says :—

One of our aviators dropped bombs on the railway station and camp of Arsiero.

ITALY.

The communiqué of September 15th says :—

Another air squadron attempted a raid on Udine, but was attacked by our machines, driven back, and pursued to the Carso.

Enemy encampments at Nabresina and Komen were successfully bombed by our aeroplanes.

* * *

The communiqué of September 16th says :—

An enemy aeroplane made yesterday a flying incursion in the Vicentino, throwing bombs from a great height upon Asiago and eight on Vicenza. Only very slight damage and few cases of injuries are reported.

The communiqué of September 17th says :—

Aerial reconnaissances had confirmed the presence of numerous trains in the stations of Nabresina and Santa Croce along the railway to Trieste. The line was bombarded and damaged by one of our aviators in the neighbourhood of Gabrovica.

An aviator dropped a bomb on our hospital station at Begliano. Fortunately, no damage was done.

* * *

The communiqué of September 19th says :—

Our dirigibles made an incursion on the enemy's aviation camp at Aisovitz, where they dropped 40 bombs. The crossing and viaduct of the Nabresina railway were also bombarded. Our dirigibles returned to our lines undamaged.

Enemy aircraft, on the other hand, dropped bombs on undefended towns, such as Asiago and Bassano. There were only a few wounded among the population and slight material damage. No soldiers were hit.

* * *

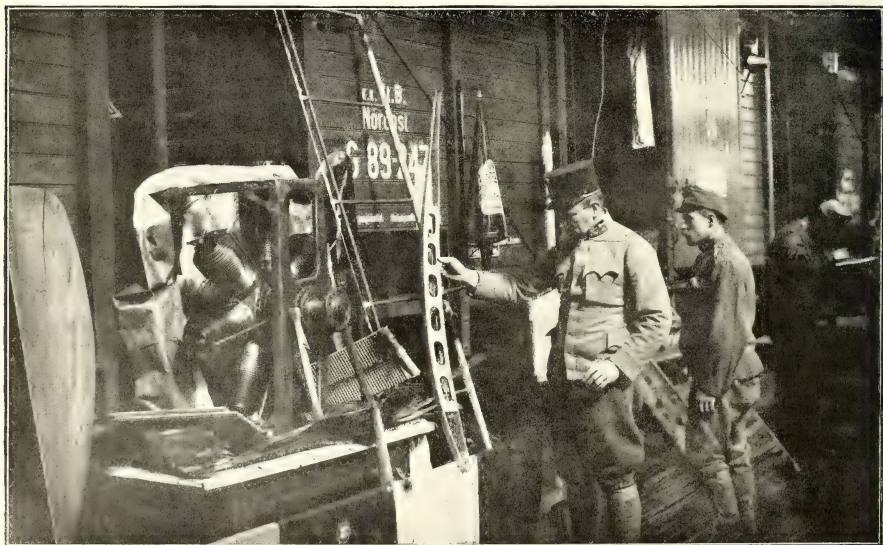
Padre Alfani, interviewed, confirms what I reported last week as to his invention for ensuring the absolutely vertical descent of bombs dropped from moving aircraft.

The father is in peace time generally associated with earthquakes—is a seismologist in fact; so that it is not unnatural that he should now be lending his assistance in making denizens of the earth quake.

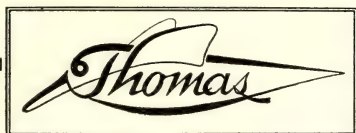
The circulation by two patriots in Trieste of a typed acknowledgement of D'Annunzio's heavenly messages has ended badly; repression sufficient to satiate the longings of even a mediæval censor has occurred.

In the military bulletin of 14th inst. may be noted the promotion to the rank of captain of seven lieutenants of the Aeronautical Corps whose names have adorned these columns in olden times as instructors, record-makers, and other good-doers, and allows one to conclude therefrom something of the activity of the corps.

The reported frequent passings of enemy planes from Orsova (Hungary) to Constantinople over Serbia and Bulgaria is treated as fact by the Press here.—T. S. H.



Colonel Uzelac, chief of the Austrian Aviation Corps, inspecting the relics of a Russian aeroplane.



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HOLLAND.

The "Telegraaf" reports that the Dutch steam lifeboat "Brandaris" landed at Terschelling two men of the German seaplane which was wrecked in the North Sea.

* * *

It was reported from Amsterdam on September 14th that the constant violation of Dutch territory by Zeppelin airships is arousing both uneasiness and indignation in Holland. It is felt that Zeppelin flights to and from England are being facilitated by the easier navigation conditions afforded by keeping the Dutch coast line in sight or by passing over Dutch territory.

In an article, headed "Delayed by Censor," by Mr. Boas, a Dutch journalist, in the "Telegraaf," criticism is directed against the Dutch censors for delaying telegrams sent by correspondents at places where Zeppelins are sighted, thus enabling German aircraft to do their "noble" work in England in killing women, children, and other non-combatants, without the possibility of giving warning to England of the expected arrival of the "heroic" raiders.

Mr. Boas points out that the delay in sending telegrams containing news of Zeppelin flights over Holland is a misinterpretation of the Dutch neutrality. He also recalls the fact that the Amsterdam correspondent of the "Kölnische Zeitung," some months ago, expressed the hope that strong measures would be taken against those who telegraphed information concerning the movements of German airships bound for England.

[It must be remembered that in the nature of things Holland is very close to Germany, geographically, racially, and commercially, so it is somewhat natural that there should be a considerable volume of pro-German sympathy among certain classes in Holland. Of course, Dutchmen who wish Holland to retain her independence are anti-German, but all do not agree on this point.]

The true reason for the violation of Dutch territorial air by German airships may very probably be the fear of what they may encounter over the North Sea if they venture to leave the coast in daylight. The Germans naturally know more about this than we do, and may have met members of the R.N.A.S. on previous journeys.—Ed.]

BELGIUM.

The "Telegraaf" (Amsterdam, September 16th), learns from the Belgian frontier that the destruction of a Zeppelin near Brussels occurred as follows:—The airship ascended at Etterbeek, but did not answer her helm, and her movements were erratic. In descending she touched the roofs of the houses and was severely damaged. She finally came to earth between Zellic and Berchem. Four officers were killed—[Which small number further confirms the impression that it was not a Zeppelin at all.—Ed.]

* * *

The Ghent correspondent of the "Telegraaf" on September 16th says:—"The reports which have appeared in some of the British papers concerning the air raids by the Allies, stating that 103 persons were killed in Ghent and 10 killed in Roulers are without foundation. Nothing of special interest has happened at Ghent, and the reported air raid on Roulers is probably confused with the air raid on Lichterwede."—[And as the Ghent correspondent quoted is probably German, or pro-German, or sub-German, what he says may or may not be true.—Ed.]

* * *

Describing the recent bombardment of the Belgian coast by the British Fleet, the "Belgische Standaard" says:—

"About 50 warships were on the horizon. A captive balloon was moored to the flagship. A fleet of aeroplanes flew over the warships. For over an hour three or four of the ships bombarded the coast north of Nieuport. The

German batteries responded feebly. A Taube was driven off.

* * *

The "Echo Belge" announces that an Allied aviator again bombarded Ghent on Sunday afternoon, September 12th. German artillery fired upon him. His objective was an important cotton factory. Six bombs fell directly on the factory, which was destroyed by fire. There were, it appears, two score German soldiers killed and wounded.

* * *

It was reported from Amsterdam on September 20th that on the 19th heavy gun-fire was heard at Sluis and Terneuzen, from the direction of Westende and Middelkerke, and it became known that the Belgian coast was being shelled by the Allies. The "Nieuwe Rotterdamsche Courant" states that the Belgian coast was also attacked by Allied aviators.

* * *

The "Telegraaf" (Amsterdam, September 20th) learns from Antwerp that sheds for Zeppelins are being removed from Brussels. The sheds at Evere, where one of the dirigibles was completely destroyed by the R.N.A.S. some time ago, have been broken up, and workmen are now busy with the sheds at Berchem—St. Agathe.

[This is a very significant piece of news. Primarily, it shows that the R.N.A.S. has been highly effective in putting the fear into the airship people in Belgium. Secondly, the erection of new sheds at Antwerp seems to indicate that the future plan of the Germans, during the long winter nights, is to bring their airships across Holland, from the sheds at Düsseldorf, Hamburg, etc., during the afternoon, and replenish with fuel or load up with bombs at Antwerp, for raids on England. The Antwerp sheds will also be useful refuges in case of sudden weather changes preventing the ships from getting back direct to Germany. British authorities please note.—Ed.]

TURKEY.

It was reported from Athens on September 18th that a French aeroplane on Thursday flew over Adana and dropped two bombs, killing two Turks and wounding two others. It afterwards bombarded the railway bridge over the Pyramus.

THOSE RUMOURS.

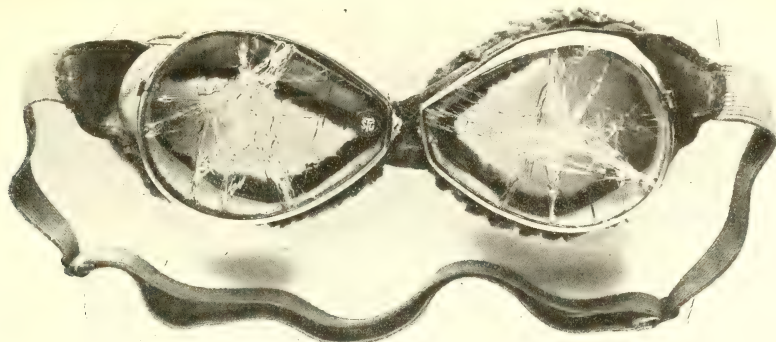
A notice was sent out on September 14th saying:—

Mr. Claude Grahame-White called at the Press Association office last evening, finally to dispose of a widespread rumour that he had met with a very serious accident. Mr. Grahame-White is in the best of health.

The rumour of a serious accident was only one—and the least foolish and obnoxious—of many with which the name of the popular aviator has been connected during the past week. The number of hours which must have been wasted by thousands of people ringing up this office, and others where the inmates are supposed to know something about flying, and asking whether Mr. Grahame-White was to be found at Hendon, must in the aggregate total up to about enough to pay for several new aeroplanes, even taking the time of the callers at the lowest Trade Union rate.

There have been times when the writer has been frankly in opposition to Mr. Grahame-White and has felt called upon to criticise his actions and policy, but he wishes on this occasion to congratulate him on having done quite the right thing in thus confuting the mean and despicable lies which malicious fools have been circulating about him.

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AIRCRAFT IN THE HOUSE.

SEPTEMBER 14TH, 1915.

ANTI-AIRCRAFT (LONDON) CORPS.

4. Mr. KING asked the Under Secretary of State for War what decision, if any, has now been reached in respect of the suggested transference of the Anti-Aircraft (London) Corps from the Admiralty to the War Office?

The PARLIAMENTARY SECRETARY TO THE ADMIRALTY (Dr. Macnamara): No decision on this question has been arrived at; but, as my hon. Friend will have noticed, Admiral Sir Percy Scott has been appointed by the Admiralty to take charge of the gunnery defences of London against attack by enemy aircraft, and has already taken up his duties.

Mr. BOOTH: Are we to understand that the Government is now for the first time seriously considering the defence of the Metropolis?

Dr. MACNAMARA: I cannot be supposed to accept the suggestion contained in that question.

Sir F. LOWE: Has the manner in which Paris has been defended against aircraft been fully considered by the Admiralty, and have any steps been taken to adopt adequate defence measures for the City of London?

Dr. MACNAMARA: I think the hon. Gentleman will see that it would be manifestly impossible for me in the public interest to enter into any discussion on that topic.

Sir F. LOWE: Does the right hon. Gentleman think it would be improper for him to consider the manner in which Paris has successfully defended itself against these air raids? It seems to me that it would be in the public interest that we should do so.

Sir H. DALZIEL: Can the right hon. Gentleman offer any valid reason why the appointment of this distinguished gentleman was not made earlier?

Mr. KING: May we take it that the appointment of Sir Percy Scott indicates that this service will be under the Admiralty and not under the War Office—that it will be retained by the Admiralty?

Dr. MACNAMARA: Sir Percy Scott has been appointed by the Admiralty, and for the time being, at any rate, this is under the Admiralty. I have said I can give no undertaking about earlier proposals.

[This, be it noted, is what passes for discussion among the lineal descendants of the late King Alfred's Witun-gemote (or Assembly of Wise Men).—Ed.]

SEPTEMBER 15TH, 1915.

Sir H. DALZIEL said: The First Lord of the Admiralty is nominally responsible for the aerial defence of London. I know that the right hon. Gentleman, on account of his other duties, cannot possibly give much personal attention to that matter, and I hope he will realise that I am not putting these questions to embarrass him, and if he replies that some of them cannot be answered in the public interest I shall not complain. I should like to ask whether the Admiralty are satisfied with the aerial defence of London? Are they satisfied that the guns of which we have heard so much are the right kind? Are the Admiralty satisfied that they are powerful enough for the purpose for which they are intended? Are they satisfied that the men in charge of those guns are fully qualified for the responsible task which has fallen upon them, and have they had enough practice in order to give some reasonable ground for assuming that their firing of the guns, when occasion arises, will be successful? I particularly ask the question as to whether the Admiralty are satisfied with the practice these men have had. I also wish to know why in the recent visit of the Zeppelins to London no aeroplanes, so far as I know, were requisitioned, although I understand there were plenty waiting for that purpose? I am not asking these questions in any spirit of complaint, but I think it would satisfy the

public if we could get some reasonable explanation on this point.

I also wish to know whether the Admiralty have made a definite study of the defence of Paris in this respect. I think it is now admitted that the aerial defence of Paris is complete and that the Zeppelins and other flying machines which used to fly over that city have practically been unable to make any headway there. I further desire to know who was the officer in charge of the aerial defences before Sir Percy Scott was appointed? I think that is a point upon which the House might welcome information. The appointment of Sir Percy Scott has, I think, been received in all quarters with the greatest satisfaction. So far as I know I do not think any other man would give more confidence to the country in regard to the important task which he has been asked to discharge. I cannot, however, understand why it was necessary to wait until the Zeppelins had visited London before calling in the advice and co-operation of Sir Percy Scott or some other officer. Of course, the mere fact that Sir Percy Scott is in charge to-day may not mean that your system before was imperfect, and will immediately become perfect now. Nothing of the kind. The whole question is one of the provision of proper guns, and while we welcome Sir Percy Scott's appointment, it seems to me that we must not expect too much until he has had time to review the whole situation and secure the guns which will be required.

The FIRST LORD OF THE ADMIRALTY (Mr. Balfour): The right hon. Gentleman who has just sat down made a pointed and perfectly legitimate appeal to me to say something about the defence of London. In order that the House may really judge of the situation fairly hon. Members must remember that nobody foresaw, when the war broke out, the full development of aerial war, whether on our own part or on the part of our opponents. Unfortunately they did not all read THE AEROPLANE.—Ed.]

This is a branch of war which has never been tried before, and on which there has been no experience until this war which counts for anything, and therefore it is inevitable when you have to deal with a situation of that sort that before your eyes the situation changes, and the organisation which those responsible before the war might naturally have thought adequate is proved by experience to be quite inadequate.

Take this case of the defence of London. In the first place, we may be asked why the Admiralty has got to defend London at all? It is a question on which I have no personal knowledge. I found, I frankly admit to my surprise, that when I took over the Admiralty I was also responsible at the same time for something which seemed to have either no connection at all, or only the remotest connection, with naval work. It is a paradox unquestionably. [Of course, he could not be expected to know that London is the greatest port in the world, and therefore remotely connected with the Navy.—Ed.]

If we had set to work, let us say, three or four years before the war with a full knowledge of the development of aerial warfare; if the Government of that day had set to work with that knowledge to organise the defence of London, I have no doubt it would have been organised on lines different from those which now prevail, but you really ought not to criticise the Minister then in charge because it is not done. That is not a fair way to look at human effort. The Naval Aerial Service has, I think, quadrupled since the war commenced—I rather think I am under the mark in saying that. Consequently, an organisation which might have been adequate, and was adequate when the war broke out, gradually became more and more inadequate, and responsibilities which seemed relatively slight, in regard to the defence of the internal parts of the country, and which seemed adequate at the beginning of the war, have been gradually supplemented, and are still in course of being supplemented.



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day by day. I hope the organisation intended to meet this danger is improving, and improving far more rapidly than the danger itself. That is my hope and my expectation.

The right hon. Gentleman dwelt and is quite right in dwelling upon the question of guns. Guns have been the great difficulty. You cannot get guns simply by saying that you are prepared to order them, that you are prepared to pay for them, that you know the type of gun you want, and that all that you desire is that they should be made as quickly as possible. I believe the whole question of designing guns to meet aerial attack did attract the attention of those responsible some considerable time before the war. The type of mounting was new, and it required a great deal of experimental work to be carried out upon it. When war broke out, although much had been done in the way of preparation, the actual number of guns was not very great, and they have not come in very fast compared with all the work which they are called upon to do.

Let it be remembered that under modern conditions the Navy has not merely, in regard to aerial craft, to defend the inland parts of the country, which, as I said before, are rather anomalous functions to be controlled by that particular Department, but it has to defend its ships obviously against aerial attack, which is now one of the recognised forms of maritime warfare. That means that for all your ships you require anti-aircraft guns. It means that the strain thrown upon the supply of anti-aircraft guns is very great, and unquestionably at the present time the supply has not reached the crest of the demand. It is improving, as the supply of all other munitions is improving. I do not pretend for one moment that it is in the position in which I should desire to see it.

The right hon. Gentleman asked why Sir Percy Scott, whose appointment he is good enough to approve, was not appointed before. Well, Sir, the answer to that is really the answer to all this particular class of attack. There are things which were foreseen before the war; and there are things which were not foreseen, and which I do not think could have been foreseen before the war. One of them was the peculiar development of this method of warfare. [Why, even the daily Press discussed the bombardment of London years ago!—Ed.]

The appointment of Sir Percy Scott is not the only great change of organisation which it has been found necessary to effect in consequence of the development of aircraft warfare. I now find it absolutely necessary to bring the whole Air Service more into harmony with the general practice of the Admiralty, to greatly increase the staff at the head of affairs, and to make arrangements to deal with the enormous amount of work which is now thrown upon those responsible for the Air Service. The Naval Air Service is now an immense Service. The number of fliers is very great, and the number of machines is very great. There are responsibilities as regards the design of machines. There are responsibilities for arranging the whole system of coast defence, and the organisation, which was not inadequate when the war broke out, I found completely inadequate soon after I assumed responsibility as First Lord of the Admiralty. I hope, as regards the organisation, that that is now either complete or is in a fair way towards completion. The changes have been very great, and they have all been in the direction of fitting the office to deal with new and great responsibilities, and I hope, as time goes on, that their adequacy will more and more make itself felt.

If the right hon. Gentleman asks me whether I think that at this moment everything has been done that could be done, or will be done for the defence of London, I do not think so. I think the thing is still in progress, and still in process of development. If he asks me whether I think it possible, within a reasonable time, to provide an adequate defence of London, I should give him a much

more reassuring answer. Let me frankly say I should give him a more reassuring answer in no small degree because I have a great belief in the organising capacity, the energy and resource, and the openness to new ideas which has always characterised the distinguished Admiral who now has the defence of London immediately under his control.

The right hon. Gentleman mentioned Paris. Well, Sir, pains have been taken to make ourselves acquainted with the methods of the defence of Paris, and much no doubt has been learned, and will be learned, from studying their example. But let not the House be carried away with the idea that the problem of London is identical with the problem of Paris. I am sure the right hon. Gentleman does not fall into that error. Nor, if I may say so, is the problem of the Minister who has got to try and defend London at all similar to that of the Minister who has to try and defend Paris. Paris starts with being under a single military government, and it starts with being a great military fortress; therefore, being a military fortress, it is supplied with a great mass of guns and with great defensive arrangements. London is not a fortified town. London is, as everybody knows—nobody knows it better than the Germans—a city which should not, under the law of civilised warfare, be the subject of this kind of attack. [Then why were any guns ever mounted in or near London at all?—Ed.]

But we take our enemies as we find them. We perfectly recognise that a nation which is prepared for any degree of brutality at sea is not likely to show undue humanity when it comes to deal with land. Therefore we do not for a moment suppose there will be immunity for London or any other undefended place in this country, or that they will derive more consideration from the laws of humanity or the laws of nations. But I hope and believe, although I cannot promise immunity from attack to any part of the United Kingdom—in war immunity from attack can be rarely promised by any responsible Minister or general—and I think I can promise the House that everything is being done to develop and to organise such defences as are possible against aerial attack.

[The rest of Mr. Balfour's speech is not worth reporting. It merely consists of platitudes which expose, as do the foregoing passages, his lack of grip of his subject. What would not one give to see Mr. Churchill in charge of the Air Service again?—Ed.]

SEPTEMBER 16TH, 1915.

AEROPLANE COVERS (POISONING ARMY WORKERS).

15. Mr. ANDERSON asked the Secretary of State for the Home Department whether he will give a Return of the number of cases of poisoning by fumes of tetra-chloride of ethaine which have occurred during the current year among workers employed in doping or varnishing the covers of aeroplanes, balloons, and similar work, and the number of these cases which have ended fatally; whether certain firms are employing a dope for this purpose which does not contain tetra-chloride of ethaine; and whether aeroplanes so treated have been found satisfactory.

THE UNDER-SECRETARY OF STATE FOR THE HOME DEPARTMENT (Mr. Brace): According to the information supplied to the Home Office, nineteen non-fatal and four fatal cases of poisoning by dope containing tetrachlor-ethaine have occurred during the current year. The inquiries in the latter part of my hon. Friend's question concern the Admiralty and War Office, and the Home Office is at present in communication with those Departments on the points in question; but I may say that adequate precautions are being enforced by the Factory Department in all works in which the process of doping is carried on.

[Will someone please ask whether permanent injury is done to women employees who may show no immediate symptoms of "dope" poisoning?—Ed.]

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Efficiency in Production.—(Continued.)

BY ANGLO-AMERICAN.

This aspect of the subject has been dwelt upon rather because the chief weapon of the Taylor system is *stimulus*. And it gives a man a zest in his work and conduces to efficiency when he is continuously conscious that he is working under the friendly eye of the staff manager, and that if he scores any hits he will get full credit for them. The same thing applies to the offices and the shops, to the executive staff and the workmen. It does not guarantee that every workman will become a works manager, though if a workman "has a Field Marshal's baton in his knapsack" the staff manager is quite likely to unearth it and bring it to light. But it does guarantee that the workman will do his work in the most congenial way and with the least fatigue.

As before stated, it is not a system of keeping a man on the run perpetually. On the contrary, it not only recognises the need for, but insists upon, regular rest periods at the proper times, and the man is even encouraged to sit down at stated intervals, and when working to use his strength sparingly and to the best advantage.

REAL TRAINING.

The analogy of the training of an athlete is a very close one. Thus, if a man was starting out for a 20-mile Marathon, he would go about it very differently from what he would do for a 100-yards sprint. Also, the training of a man who had a tendency to run to fat would be different from that of a man with a tendency to malnutrition. Similarly, each workman is treated in accordance with his own individual temperament and the nature of the job. He is taught not only to do the job in the least possible number of operations but in the least possible number of *movements*. All needless movements are cut out, and all lost motion is reclaimed; thus, for a given output of work there is much less fatigue than ordinarily.

It is the unanimous testimony of workmen who have been Taylorised that at the end of the day, though they have got through considerably more work than under haphazard methods, they feel fresher and much less fatigued than they would under the ordinary working system.

As an illustration of needless fatigue and its saving under Taylor management, take the case of a bricklayer working up a scaffolding. He has a number of bricks strewn about the floor of the scaffolding, and a pile of mortar, too, whereas the wall he is working at is perhaps breast high. Now, he has to stoop down to the level of his feet and pick up a trowel full of mortar and dab it on the place where the next brick is to go, and then having disposed it to his satisfaction he stoops down and picks up a brick, and after turning it round and tapping it with the trowel, puts it in place. Then he stoops down for some more mortar and then for another brick, and so on. That means that he has to raise and lower his own centre of gravity an enormous number of times in the course of a day, and it all means fatigue, and, what is more, needless and unproductive fatigue. And it can be avoided by a little arranging.

Thus, the floor of the scaffolding on which the man stands should be made variable in height so that the top of the wall is always about the height of his elbows. The bricks should be arranged on a bench of such height that his hand naturally drops on to them without his having to stoop. The mortar should be on a board or tray arranged to go on top of the wall close beside the spot where the next brick is to be laid and easily moved along as the work progresses. It involves having a labourer constantly on the scaffolding to arrange the bricks as required. The hod carriers bring them up and shoot them on to the floor and the bricklayer's mate arranges them on the bench, and the economy effected more than pays the

wages of the extra labourer, to say nothing of the decreased fatigue of the bricklayer.

AN AIRCRAFT JOB.

Here is an aeronautical job with its Taylorisation. Suppose a man has got to stamp "AGS 137 RH" on each one of a gross of nuts, the ordinary way to do this job would be to take one nut and place it on a block. Then find the A stamp and stamp that on the nut. Then lay down the A stamp and find the G. Then re-arrange the nut which has probably jumped away. Then stamp the G on it. Then find the S, and so on, until at last the whole of that legend has been impressed upon the one nut, which is then laid aside with a sigh of relief and the next one is tackled.

They would take some three minutes each, which would mean that the job would take at least seven hours, or, allowing for the man's rest periods, and for recovering from the ennui caused by the terrible monotony, it would be something like twelve hours, by which time the man is pretty badly fed up with the job.

Now, the proper way to do that job—if it were necessary at all—would be to lay out all the nuts in a row, the whole gross, if possible; but, at any rate, as many as practicable, and then stamp the A on the whole lot one after the other in rapid succession, then the G similarly, and so on. Some arrangement would be required to prevent the nuts that were awaiting their turn for stamping from jumping about due to the jarring of the bench, but it would be possible to make, at a cost that is not quite ruinous, a simple clip arrangement to hold them. A simpler "dodge" would be to stick them down with thick grease or cobbler's wax on a face plate, but a clip that could be adapted to do duty for several sizes of nuts would probably be better.

If the nuts are slender, as I believe those of that number in the R.A.F. specification are, and are likely to succumb to the stamping, they should be supported by screwing in a rod. One long rod should be employed and screwed into place with a breast drill when the nuts were in place in the clip but not tightened up. The whole job could be done in about half an hour by this means, which shows how an enormous saving of time can be effected by a little "work planning," in even a simple little job that at first sight does not appear to be worth making special tools for.

THE USE OF JIGS.

Englishmen really are extraordinary creatures. They do not yet appear to have grasped what the main purpose of jigs is. Said a workman who had some idea of what tools are to the leading hand in a shop in which he had recently started work, "Is there a jig to drill these plates to?" "Jig?" said the leading hand, "No, 'tain't particular. They're only wiring plates." That may be, but the primary purpose of a jig is not accuracy so much as *speed*.

Which calls to mind the satire of a British workman of the old scribe-line-and-centre-pop school, but otherwise intelligent, when he got into a motor-car shop where tools were highly specialised. He remarked in a tone of scorn, "They've got a jig for every oil hole!" His statement was not quite true, but he worked in that shop long enough to learn that there is some sound sense in the principle of a "jig for every oil hole."

(To be continued.)

FROM OVERSEAS.

The Colonial Office has learned from the Overseas Club that the sum of £2,250 has been received from Montreal to pay for a 100-h.p. Gnome-Vickers gun-mounted biplane, to be called Montreal No. 1, and added to the Imperial Aircraft Flotilla.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

OBSCURE SYMPTOMS OF TROUBLE.

However, if the missing still continues, although the plugs have been found in perfect order and sparking, switch off and examine the contact breaker and distributor. Some particle of dirt, or even a film of oil, may have created all the trouble, so it suffices merely to clean both.

Still continuing, next examine all terminals of the wiring connections, and go over the whole system to detect any loose connections, breaks in the wiring or its insulation (here is the defect of armour-sheathed wiring that it hides an insulation fault), or, especially if there seems to be trouble in one magneto only—examine its low-tension contact breaker. Finally, of course—or preferably at first, as I have already said—test the earth wire from the switch by disconnecting it from the magneto and stopping the motor by throttling it dead. Then, of course, any defect in the switch will be manifest. But if, after all these searches and tests have been made, the trouble still persists, there is probably a short in the high-tension wiring of the armature, or some other internal magneto trouble, which means that nothing can be done but to substitute another. Yet, as a last resource, try advancing the ignition, as misfiring all round will establish the trouble, not as of ignition at all, but of carburation, which in turn may be due to defective valves or incorrect valve gear adjustment. Thus by a process of eliminating the impossible, as said Lecoq, we arrive at the truth at last. Eliminations and truths too, which I have dwelt upon in detail, as they apply just as well to every aeromotor more or less.

CERTAIN POINTS OF CARBURATION.

Like the magnetos, the Beardmore carburettors are accurately adjusted, set, and synchronised before they leave the works, and normally do not need to be touched. Still, should some accident or replacement have occurred that interrupts the original setting, the procedure is to fit the spare jet, flood the carburettor, and prime the motor in the usual way. Having then switched on the starting magneto and started the motor, at once switch on both magnetos and advance the ignition half-way. Then pull the throttles wide open, and note whether the motor begins to pop back into either carburettor, or suddenly accelerated without any further movement of the throttle or ignition levers. If it does, that carburettor is pounding, because the jet is too small. The jet must be taken out and reamed through most delicately to not more than half a thousandth of an inch larger, before making a fresh test, in any case; and even this minute enlargement will generally be found all-sufficient.

Let us assume, however, that all this has been done, and that the motor should be, but somehow is not, running satisfactorily, that it is even missing occasionally. An exhaust valve may be actually sticking, or working too stiffly. This may be corrected for the moment, or permanently, by turning the motor over until this valve is pressed off its seat, and then squirting paraffin down the stem and guide. At the earliest opportunity, however, it should be removed and polished with fine emery-cloth—rubbed on over the valve edges, not round the disc of it—rubbing the stem well with graphite before replacing, cleaning and polishing the guide at the same time. Before removing a valve, however, test all six cylinders for compression to make sure which valve or valves of the entire dozen is in fault; and to do this, test each cylinder in turn by removing the plugs from the other five. Normally, the compression should be 95 lbs. To get finally at the valves, then, disconnect all petrol and water connections, the induction piping, and the control rods; uncouple the valve-operating levers, and

loose off and draw the fulcrum bolts, when both levers and valve springs can be finally removed. Then, by unscrewing the inlet bends, the valve, or valves, complete in the cage, can be taken out. And then, after drawing the exhaust valve cotter, each exhaust valve can be drawn through the cylinder by hand, and extracted through the inlet port.

VALVE ADJUSTMENT METHODS.

Here the inconvenience—due to the peculiar design of the motor, already discussed—is that of grinding the exhaust valve in the cylinder. Thus, in the first place, a piece of steel about four inches long, of a size to fit the cotter slot—an old screw-driver blade will do—is required; and, secondly, it is as well to get the piston well down, and stuff the compression chamber with pads of linen cloth—not cotton waste—to catch all droppings of emery. This done, proceed to grind in the valve lightly, using only the finest emery powder and olive oil, finishing with flour of emery and oil, washing with kerosene and polishing, dressing the stem with graphite before replacing. The valve-gear assembly, of course, goes in the reverse way to the dismantling; so the only thing requiring special attention is the tappet adjustment, which *must* leave a clearance of $7/10$ mm. between the valve stem and the contact butt of the rocking lever. This, owing to the cam profile agreement with the bell-crank, will leave the valve timing correct, so far as the relation of the valve gear goes.

HOW THE VALVES ARE TIMED.

To complete the timing of the valves in each cylinder anew, however, demesh the half-time gearing to begin with. Then take a straight piece of $1/16$ wire, about 14 in. long; insert it through the spark-plug hole in No. 1 cylinder, turning the motor until the piston is at full in-stroke. Mark the wire. Then turn the cam-shaft full circle, and see if the specified $7/10$ clearance exists between the valve spindles and the rocking-lever contact butts. If not, remove the pin in the lever jaw, slack back the lock nut, and adjust until the clearance is obtained before reinserting the pin. Next, to get the inlet valve in proper time, turn the motor until the piston is $4/5$ of a millimetre down, and then turn the cam-shaft until the rocking-lever contact butt touches the inlet valve stem. Then place the idle gear wheel in position, and fix the timing wheel to suit the holes in the flange and the teeth in the idler. Thirdly, turn the motor until the piston is at full out-stroke, and mark the wire, and keep on turning the motor until the contact butt is just leaving the inlet-valve spindle, and mark the wire again. From this last mark to the full out-stroke mark the distance should be between 10 and 12 mm.—no more nor less. Fourthly, for the exhaust valve turn the motor until the lever contact butt touches the valve stem, and again mark the wire, which should show 18 to 20 mm. between this mark and full out-stroke mark. If, however, it shows less than 16 mm., a washer must be fitted to the adjustment end of the rocking lever, and the contact butt clearance must be duly adjusted as already explained. Finally, turn the motor over until the contact butt is just leaving the exhaust-valve spindle, when the wire should show piston at full in-stroke mark to 5 mm. above it, or "late." In my opinion, better 4 mm. late. Which, cylinder by cylinder, completes the operation of timing, as said.

ADJUSTING THE LUBRICATOR.

Of course, anything of the kind—when all external accessories have been necessarily cost free—affords a good opportunity of cleansing the mechanical lubricator, by removing the lid of its casing, when the pump mechanism can at once be removed bodily and washed in kerosene,

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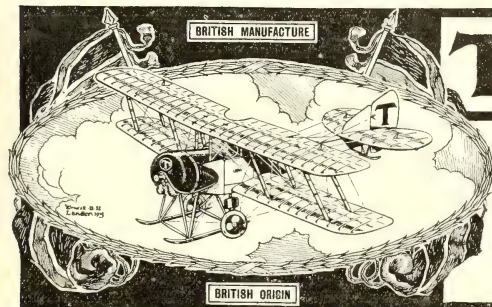
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particular attention being given to the cleansing of the suction-pipe fitters and like parts, chiefly by removing the drain plug beneath the casing. Again, when the screwed filter cap is removed, the six adjusting screws that control the feed to the different leads become accessible; and the amount of oil fed can be varied from zero to fifty drops for each complete turn of the adjusting screws, the only thing to remember being that the screw turns clockwise to increase the oil feed, and anti-clockwise to reduce it.

In any event, after even 250 hours' running—with a limit of 300—a complete dismantling and overhaul of either type of Beardmore aeromotor becomes essential. All this, however, is no work for a mere amateur, or any but the most competent mechanics; as irreparable damage can be easily done through carelessness or lack of necessary knowledge. Careless, nevertheless, I am sure you will not be. Your competence in looking after a Beardmore aeromotor is your own equation altogether beyond me to impart. All I have been able to do, is to give you at least the knowledge of what to do: and, as far as possible, how. I can merely warn you not to assume your skill to any greater degree than you possess it. The risks are too great.

(To be continued.)

A NEW GRAHAME-WHITE SCHOOL.

The progress of the Grahame-White Aviation Company is in no way hampered by the absurd rumours which have been recently circulated as to the horrible fate said to have overtaken its managing director. Since the outbreak of war, the use of the Grahame-White School has been restricted to Admiralty pupils, probationary flight sub-lieutenants, twelve at a time, and under the excellent management of Mr. A. Murray Ross a great amount of valuable work has been done.

It has now been found possible to establish a civilian school, and there are vacancies for a strictly limited number of pupils. So many privately owned schools are at present full, while the supply of pupils shows no signs of diminishing, that no doubt these vacancies will quickly be filled.

The first of half a dozen new "box-kite" machines intended for school work came out of the Grahame-White works, in all the glory of new varnish and a stylish monogram, last Friday. It appears to be extremely well constructed, and is fitted with a 60-h.p. Le Rhône engine.

When tested, with an Admiralty inspector as passenger, and 12 gallons of petrol on board, it climbed 1,000 feet in 2 minutes 50 seconds. It carries a passenger well, and obviously compares favourably with other machines of the box-kite type, both in lifting and climbing capacity.

Those who would like to join the school would do well to apply early, for, in theatrical parlance, "the box-office is now open."—D. W. T.

FROM DENMARK.

THE AEROPLANE'S Danish correspondent sends the following information:—

The casualty list of the Feldflieger department, published in "Flugsport" of June 16th, runs:—

Oberlieut. Kühn, killed; Oberlieut. Bussow von Bülow, killed; Oberlieut. Student, hitherto heavy wounded, died; Oberlieut. Görschardt, missing; Oberlieut. and Aviator Rosenbaum, heavy wounded; Lieut. Nette, killed; Lieut. and Aviator Schwartzkopf, slightly wounded; Lieut. and Aviator Müllerschowski, taken prisoner; Lieut. of the Reserve Michel, missing; Lieut. out of service Hansmann, died from wounds received in flight accident; Officer-Replacer May, slightly wounded; Vizefeldwebel and Aviator Schweinberger, slightly wounded; Sub-Officer and Observator Rosenthal, heavy wounded in a flight accident; Aviator Giedow, drowned; Voluntary Gefreiter and Aviator Müller, killed in flight

accident; Voluntary Kuhn, killed by a flash of lightning on march; Ersatz Reservist Pachman, slightly wounded; Naval Aviator Oster, taken prisoner.

"Flugsport" of June 30th contains the following casualty list of the Feldflieger-department:—Capt. of the Reserve Schmidt, killed in fatal accident; Oberlieut. Foerstnow, missing; Oberlieut. Görschardt, hitherto missing, killed; Lieut. Rössler, missing; Lieut. Rudolph, slightly wounded; Lieut. Baron von Maltzahn, killed; Lieut. of the Navy von Gündel, killed in fatal accident; Lieut. Holle, taken prisoner; Lieut. Voigt, killed; Lieut. Michell, hitherto missing, killed; Lieut. Schwartzkopf, Lieut. Frisch, slightly wounded; Vizefeldwebel Weingärtner, slightly wounded; Vizefeldwebel Grabitz, killed; Sub-Officer Beckmann, slightly wounded in an accident; Sub-Officer of the Reserve Beggel, killed; Sub-Officer of the Reserve Lutz, heavy wounded.

"Flugsport" of July 14th continues the casualty list of the German aerial forces:—Feldflieger-department: Capt. of Horse of the Reserve von Schickfuss und Neuröhr, wounded in accident; Capt. Handelmann, taken prisoner; Oberlieut. von Arnim, killed in fatal accident; Oberlieut. Gröbedinkel, missing; Oberlieut. Leyers, missing; Oberlieut. and Aviator Koppätzky, hitherto missing, killed; Oberlieut. Foerstnow, hitherto missing, taken prisoner; Oberlieut. and Aviator Heling, taken prisoner; Oberlieut. and Observator Wintzer, in prisonership; Lieut. Wuth, missing; Lieut. Stephan, killed in fatal accident; Lieut. of the Reserve Rammelsberg, slightly wounded; Officer-Replacer Lieut. Neumann, in prisonership; Vizefeldwebel Herold, in prisonership; Sub-Officer Pesch, killed in fatal accident; Sub-Officer Walther, slightly wounded; Ensign of the Reserve von Kotze, missing; Gefreiter Grosshohnacker, missing; Gefreiter Tillmanns, slightly wounded in accident; Gefreiter Ziegler, heavy wounded in accident; Aviator Hartgurus, heavy wounded; Aviator Meise, hitherto heavy wounded in accident, now killed; Voluntary Aviator Pabst, heavy wounded in an accident; Flight-Pupil Possier, died from illness.

According to "Flugsport," August 25th, the last casualty list of the Field-Aviator Department runs:—

Von Oriola killed in fatal accident; Capt. of Reserve Balanz killed in fatal accident; Oberlieut. von Gross missing; Oberlieut. Wiebeck, wounded, in prisonership; Oberlieut. Krauss in prisonership; Oberlieut. von Poncet killed; Oberlieut. Lungershausen, hitherto missing, died in prisonership; Oberlieut. of the Active Service Jahnow killed; Oberlieut. of the Active Service Koch killed; Lieut. von Lyncker in prisonership; Lieut. Bode killed; Lieut. Giesche killed; Lieut. Blüthgen killed; Lieut. von Heyden in prisonership; Lieut. of the Reserve Lengehing, hitherto missing, died in prisonership; Lieut. of the Reserve Bake killed; Lieut. of the Reserve Culin killed in fatal accident; Lieut. of the Reserve Treumann killed in fatal accident; Lieut. of the Active Service Stoldt killed in fatal accident; Feldwebel Buchholz killed; Subofficer Trantwetter killed; Subofficer Hooff heavily wounded in an accident; Subofficer Spelthan, hitherto heavily wounded, died; Gefreiter Kuttert died from illness; Gefreiter Samann died from his wounds; Gefreiter Schädler killed; Arthur Reiche killed; Hermann Steidle heavily wounded in an accident; Karl Angermeyer slightly wounded in an accident; Gustav Buran heavily wounded in an accident; Carl Kreutzinger killed; Fritz Popella killed; Rudolf Burwitz heavily wounded in an accident; Franz Wiczorice heavily wounded in an accident; Karl Probst killed; Richard Jungblut died from illness.

* * *

At the Milbertshofen Military Aerodrome by Munich the aviator Ripkow banked too heavily. A side-slip and smash followed, Ripkow being killed, while his passenger Anwarder escaped with slight wounds.

ROBINSON CRUSOE AT HENDON.

(Among the many visitors of literary note recently at Hendon, Mr. Robinson Crusoe was not the least interesting. He was present last Saturday and Sunday, and the following is an authentic extract from his Journal which has escaped the Censor.)

Those who read, long ago, in their school-days, the true account of my adventures may have recollected the fact that I was born in the City of York, in the year 1632, but I trust they have now forgotten that my father was a foreigner of Bremen, near Hamburg. Our family name was Kreutzner, which by the usual corruption of words in England came to be called Crusoe, and it is indeed curious to reflect that so national a character as I have been for three centuries should be of German parentage.

Thanks to the easy-going nature of the English, even in time of war, it was a simple matter for me, accompanied by my faithful servant Friday, to return to England, describing myself as a Swiss and Friday as a Dutch subject, though I had feared his swarthy complexion would have raised some suspicion. On landing, I decided forthwith to visit the great aerodrome at Hendon, which has been spoken of so much of late in my father's country.

On the 18th day of September, having made an observation as well as I could, I found myself in latitude 52 degrees north, and longitude 166 Piccadilly West. After

consulting my charts I found it necessary to steer a course north by north-west, and duly arrived at Hendon.

At the entrance we were stopped by someone in authority, and I feared inquiries might be made as to my country of origin, but on producing several Spanish pieces of gold I had saved from my last wreck we were admitted.

Being strange to the country, I made overtures to one of the natives, hoping by this means to have the sights of the place explained to me. At first he appeared frightened on perceiving a stranger approach, but I made signs of encouragement, smiling pleasantly at him the while, and at length he came close, laid his head upon the ground, and, taking me by the foot, set my foot upon his head; this, it seems, was in token of swearing to be my slave for ever, by which it was easy to see he had mistaken me for a new pupil.

I took him up and made friends with him, and his simple, unfeigned honesty and his desire to tell me all he knew gave me great satisfaction. One of the first curious sights shown me was the wonderful foot-dress of dazzling colours worn by one of the natives named Manton, which pleased Friday much, reminding him of his early days among his own people, where bright colours were highly prized. A little later, however, we encountered one of the name of Ramsay, of a tribe living in the northern part of the island, whose feet were covered in yellow, crimson, and green, of so astonishing a bril-

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lance that Friday fell into a deep swoon, from which I could only restore him by copious bleeding. I learned afterwards that among these people there exists a keen rivalry for the honour of wearing the most gorgeous colours, which are a sign of great bravery.

The weather was calm and the sun hot, and a great activity prevailed among the airmen tribes. My guide drew my attention to many machines on the ground, which seemed to me like flying-kanoes, some apparently hewn out of tree trunks, with sails which faced the earth and the sky, but not the wind, as is the practice of all sails that I used in my many adventures in divers parts of the world (the history of which may still be procured from all booksellers). Each was propelled through the air by an engine, the like of which, strange to relate, was not found among the thousands of useful articles so providentially saved from my famous ship.

The first three I observed were all of one kind, so that it was not easy to discern which was which, but my guide informed me these were Beatty-Wrights, and those who controlled them were named respectively Kenworthy, Roche-Kelly, and Prodder. They flew here and there, and assumed various alarming postures, at which Friday was seized with fright and would have swooned again had we been near the large hut where they dispensed goat's-milk and other liquids.

I had often heard it said that the adventuresome spirit never rests content, and although it may find itself in peaceful surroundings, after many years of affliction and hardships, with no need to set forth again into an unkind world, yet an internal prompting will cause it to embark afresh on foolish travels and experiences. It is strange to reflect that, having been shipwrecked, drowned, eaten by cannibals, sold as a slave, slain by wild beasts, and frightened to death by footprints on the sand, there should arise in me a great desire to ascend in one of these flying-craft. Yet, by the mysterious workings of Providence, so it happened.

When, therefore, a young man of studious countenance, whose name, I perceived from the inscription on his machine, was Moore, approached and offered to take me up with him on his next journey, I accepted with great joy. Leaving my famous goat-skin cap and musket with Friday, who, poor devoted creature, besought me with tears not to forsake him, I climbed into the machine. In an instant we mounted into the air, the wind raging in my eyes so that at first I could scarcely see whither we went. As I became more accustomed to my surroundings I found we were at least a thousand feet above the ground, though barely four minutes had passed since we started, and the speed was now great. Looking around, I could not refrain from wishing that once again I were Monarch of All I Surveyed, for there I saw an extensive tract of land, and on the ground I counted sixteen of these machines, besides several in the air.

As I was ruminating on the wealth which would thus be mine our engine stopped, at which I was in my heart grieved, for the expedition was entirely to my liking, I having great confidence in my pilot. On reaching the ground I was welcomed with open arms by the faithful Friday, whose relief at my return was deeply touching. He would have celebrated his joy by killing one of the natives and preparing him for a feast, but I rebuked him for his terrible thoughts, and when I explained how the flesh of these people was highly flavoured

with oils he expressed his abhorrence, and promised once more to abandon his man-eating customs.

We took possession of two wooden chairs, which had evidently been washed ashore from some wrecked vessel, and occupied ourselves by watching other machines in the air. One of the natives, a man of high rank, announced the names of those that flew, and though they sounded at first much alike one another, I found by diligence this was not so. Mr. Manton exhibited what was called a Grahame-White scout, of great speed; Mr. Osipenko and Mr. Winter flew many times, so that I began to make an account by cutting notches in my stick; two of the tribe of Baumann also flew; and there were many fighting machines which came from distant parts of the country, or went away, no one knew whither, and were decorated with war-paint and looked very brave.

And when it became dark I had so many notches in my stick there was no room for more; and we climbed into a tree for the night in order to sleep secure from wild beasts.

The next day being Sunday (though Friday was still with me), I arose early and made my toilet. A strong wind had arisen, and no inhabitants were to be seen till the day was well advanced. When the sun had passed its highest point several natives came out at intervals, some of them clad in coats made of the skins of animals, doubtless killed in these parts, as Friday assured me he had heard was often done by the flying-machines; but these same natives contented themselves sitting near the cave where the eatables were stored.

The same pilot who had, on the previous day, taken me into the air with him brought out his machine, and although the wind continued strong and inclement he climbed into the clouds, attaining, as I was afterwards told, a height of 5,000 feet, and descending in very good fashion. Mr. Osipenko, who had also been out the previous day, twice flew on a new machine having a handsome monogram on its hinder part, and then, the weather remaining unfavourable, the adventures came to a close.

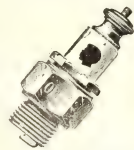
Having seen without hindrance such of the machines as were flying or remaining in their caves, and entering in my Journal such particulars as would interest my relatives at Bremen, I set sail for home, arriving at London on the evening of September 19th, 1915, having been absent nearly two days.

And here, resolving to harass myself no more, I am now preparing myself for a longer flight than all I have yet seen, having lived for many years a life of infinite hardship and variety, and learned sufficiently to know the value of wings, and to look forward to the blessing of ending my days in peace.—D. W. T.

MEMENTOES.

A correspondent sends the following recipe for manufacturing mementoes as practised by certain Service mechanics:—

Materials required:—A short section of an old aluminium induction pipe from a strafed motor, say, $1\frac{1}{2}$ inch long by $1\frac{3}{8}$ to 2 inches diameter. Tools required:—A file, some emery cloth, and a scriber. Labour required:—About 3 hours (in Admiralty time, of course), by an enterprising A.M. 2 (E). Result:—A napkin ring, crudely engraved, "A memento of Zeppelin 36," and selling for its weight in gold, as a relic of the Zepp wrecked by Lieut. Warneford, V.C.!



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The West End contains no more ornamental and well-fitted premises than those of the well-known house of Burberrys, in the Haymarket. It is a pleasure to do one's shopping in such surroundings, and when to this is added the certainty of good value one sees the secret of the success which has attended this great business.

Messrs. Burberrys, it is hardly necessary to mention, specialise in weather-proof clothing. By unique methods of weaving and proofing they have produced materials which are practically impenetrable by wet, yet free to the passage of air, as are ordinary fabrics.

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One is particularly struck by the ingenious methods of easy fastening, and by the really double-breasted coats which have been made for protection against wind. Messrs. Burberrys are always anxious to have further suggestions from practical men, but the aviator who cannot satisfy his needs from their present collection of serviceable garments must indeed be difficult to please.

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PATENTS.—Instructive leaflet free from STANLEY, POPPLEWELL & CO., Chartered Patent Agents, 38, Chancery Lane, W.C.

INVENTIVE Brains can help the Empire in its need but require to present good work in proper official form to the Board of Munitions. Only properly prepared drawings and specifications will be considered, and these we prepare. Consultations free.—Write, King's Patent Agency, Ltd., 165, Queen Victoria Street, London, E.C. 30 years' refs.

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HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger, R. Kenworthy, A. E. Mitchell and G. Virgilio.

Pupils with instructors on Beatty-Wright machines: Messrs. Arbon (50 mins.), Baldwin (20), Bond (40), Broadbent (5), Calvert (10), Crossman (85), Delves (131), Fellowes (11), FitzHerbert (60), Fox (57), T. Jones (149), King (75), Litton (75), Middleton (21), Morgan (15), Murdoch (10), Onley (10), Richard (8), Ross (131), Smith (78), Theo (106), Tolhurst (60) and Willmetts (42).

On Caudron machines: Messrs. Begg (20), Bowick (15), Brown (10), Campbell (25), Collett (20), Coates (10), Collier (40), Cowper (15), Davison (25), Fawcett (10), Gayner (15), Hodgson (30), Hoskins (30), L. F. Jones (25), Kirkwood (10), Lashmar (15), Mellings (20), Moxon (15), Nash (10), Nicholson (15), Owen (20), Rimington (30), Whincup (10) and Duffus (15).

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday by Messrs. Roche-Kelly and Kenworthy, and on Saturday by Messrs. Roche-Kelly, Prodger and Kenworthy, and 9 passenger flights were taken.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with instructor on machine: Messrs. Ball (16 mins.), Brand (18), Liddell (46), Muspratt (52), McBeune (24), Capt. Fairbairn Crawford (8), Sherwood (24), Griffith (16), Gallop (8), Thomsen (24), Chambers (8), Bolton (24), Tagg (8), Harkness (22), de Gavun (24) and Cole (16).

Straights or rolling alone: Messrs. Ball (53), Prothero (32), Stewart (25), Rees (22), Gallop (28) and Chambers (29).

Machines in use: 50 h.p. and 60 h.p. Ruffy-Baumann biplanes.

The usual engineering instruction was put in, and many students have become familiar with the internal parts of the 60 h.p. Gnome. Several passenger flights were made.

AT THE GRAHAME-WHITE SCHOOL.

Instructors for the week: Messrs. Manton, Russell and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Corry, Cross, Gammon, Hackman, Hadow, James, Sadler, Till and Mons. de Meulemester.

Straights alone: Prob. Flt. Sub-Lieut. Biscoe, Sadler, Corry, Hadow and Hackman.

Eights or circuits alone: Prob. Flt. Sub-Lieuts. Minifie, Cross and Davies.

Certificates were taken during week by Prob. Flt. Sub-Lieuts. Clifford, Roach-Pierson and Minifie.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL CO. SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irwing and C. Jacques.

Pupils: Messrs. Lochett, Lewis, Knowles, Dawson, Dalrymple and Ellis rolling. Messrs. Blackburne-Maze, Grimwade, Woolley and Rochford straights.

Eights or circuits alone: Messrs. Jamieson, Woodley, Sargood, Franklin and Grimwade.

Mr. W. Rogers took his "brevet" during the week.

Machines in use: Three L. and P. tractor biplanes.

BIRMINGHAM.

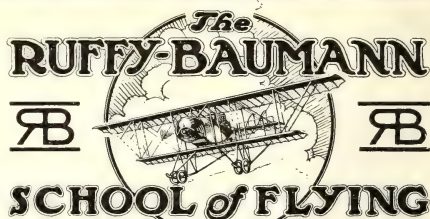
AT THE MIDLAND FLYING SCHOOL.

Instructor for the week: Mr. S. Summerfield.

Pupils doing straights or rolling alone: Messrs. C. Morley and H. Yam.

The weather for the last few days has not allowed the pupils to turn out, the wind averaging from 20 to 30 miles per hour all through the week. So they spent most of their time in the workshops receiving lessons on construction, etc. Great interest was shown in an interesting lecture given by Mr. S. Summerfield, assisted by Mr. E. Trykle, on engines and general construction.

A new addition to the school is a two-seater Blériot with a 60 h.p. Anzani, that is being thoroughly overhauled.



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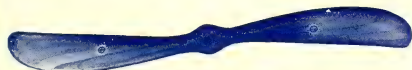
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THE AEROPLANE

WEDNESDAY, SEPTEMBER 29, 1915

Edited by
C. G. GREG

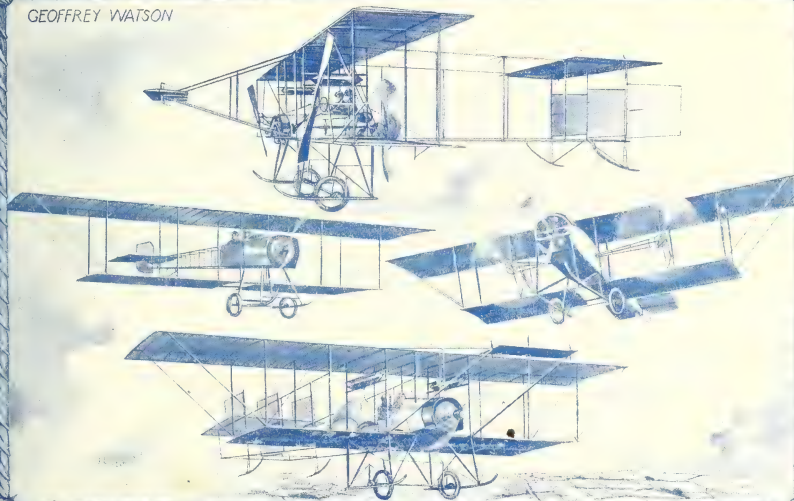
Vol. IX. No. 13

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

MILESTONES—VI (B).

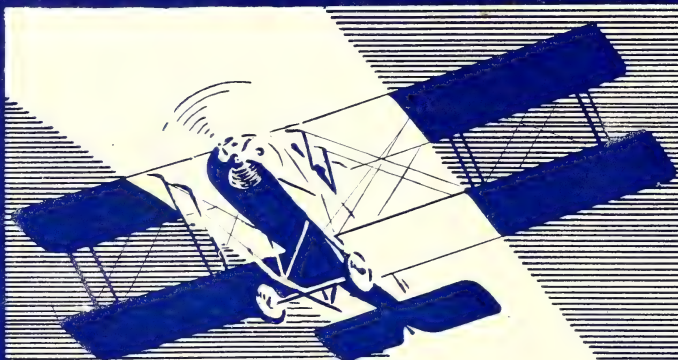
GEOFFREY WATSON



THE DEVELOPMENT OF THE SHORT TRACTORS DURING 1911—1912.—They were all co-existent, but the first was the "tractor-pusher" at the bottom of the picture. Then came the "twin-tractor plus propeller," seen at the top. A later development was the "triple-tractor" seen on the right, with two 50 h. p. Gnômes, one immediately behind the other under the cowl, one driving the two chains and the other coupled direct. Later than these came the single-engine 80 h. p. tractor, on the left, which was the original of the famous Short seaplanes.

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ON AN AUTUMN EVENING.

In these days the Club is an abnormally peaceful place. The more turbulent spirits have departed—some of them for ever, poor dears—and there seems less need than erstwhile for clocks that are chained to the wall and for matchboxes too big for the missile hand to grasp. On an evening last week the big room was populated by a little group of invalids from the fighting-line and the atmosphere above it, one or two officers on shore jobs at home—much to their disgust—a few merchants and manufacturers of munitions who were in town to argue with or to be strafed by people in White-hall, and an odd man or two who had been doing odd jobs for an ungrateful country.

The calm of the after-tea smoke was over the room when a choking sound arose from an arm-chair in which a Flying Corps Casualty was reading the "Daily Mail." People looked round, startled by the noise, wondering whether it was an apoplectic fit or merely that he had swallowed his tea the wrong way. The majority favoured the apoplexy theory.

In a few moments the sufferer recovered sufficiently to point a shaking but minatory finger at the middle page of the "Mail" and cough out: "This has fairly torn it. Now we are indeed undone. My sacred Aunt! Have you chaps seen this? Listen—'By Air to the Front,' 'And a Fight with a Hun on the Way.' 'By an Aeroplane Observer.' Someone will be strafed pretty heavily if the General finds out who did it."

"Oh! It's all right," drawled a quiet man who had just come back from France. "It hasn't really been done by anyone in the Corps. The Johnny that did that stuff observed from the ground. You go on reading it. It's one of the funniest things ever written about aeroplanes, even in the London papers."

The Casualty went on reading to himself how the alleged teller of the story was under orders to join the Expeditionary Force by air from Salisbury Plain, how he and his pilot left—for some insane reason—over the Isle of Wight, before turning eastward, and how they got lost in the clouds. All at once he let a yell which startled the room even worse than his choking fit. "Good Lord! Listen to this," he wailed, and read aloud: "'There was no top or bottom to anything. Then suddenly, right below me, I saw a brilliant flash of sunlight and a patch of blue sky. We were almost upside down—another half dozen degrees of lobsidedness would do for us; for a war machine is not a stunt machine. The Beast complained as she was righted with a great creaking of the controls and the adjustments.'—*Expliquez, s'il vous plait*, some of you high-class scientists. If this chap was above the clouds or in them, how the blazes did the sun and the blue sky get below him? And now, I ask you, what is a degree of lobsidedness, and how does an adjustment creak?"

"I venture to suggest," remarked sententiously a serious-faced young officer in blue with a couple of wavy stripes on his cuff, "that you interview the Brain-Storm Department at the Admiralty. They have a water-cooled slide-rule there which will calculate anything, and degrees of lobsidedness are regular items in

their mental pabulum. Doubtless the Experimental Department at the same admirable institution can enlighten you on creaking adjustments. Half the department consists of injured aviators whose personal adjustments creak like anything. You can hear 'em as they walk along the corridors. Subside, Henry, and go on with your knitting."

In accordance with instructions received, as the police say, the Casualty went on reading, half aloud, how the crew of the aeroplane, having passed over the Isle of Wight, went on for "a good fifteen minutes" when the engine stopped. Then he again became vocal, "Oyez! Oyez!! Oyez!!! Gather round me, little ones, and listen to this—'The noise of the propeller had hardly ceased, when we were astonished to hear the clear buzz of a biplane on our starboard below.'—Starboard bow I know, and starboard quarter I know—though I'm not a sailor, thank 'Evvings—but whereabouts is one's starboard below? Furthermore, besides, and as well, how does one recognise the buzz of a biplane?"

"You're out of date, my son!" replied an engineer. "The squadron that sent you home as a returned empty can't have had the latest equipment. Haven't you heard of our new aircraft 'listener' for use in fogs and at night? Indicates by buzzes the class of aircraft in the vicinity. Designed by the Scientific Instrument Department at the Royal Aircraft Factory. Buzzes in inverse ratio to the importance of the craft indicated. Monoplane—a wuzzy buzz. Biplane—a clear buzz. Zeppelin—an inaudible buzz. 'It is the triumph of acoustic science'—*vide* the next War Office boost in the House of Commons—'product of the Best Brains in the Universe' and all that—you know the sort of thing."

"And," chipped in a naval officer, "don't you know the phraseology of the New Aerial Navy? Collect all the regular Navy terms and adapt them to the air so as to be different from the R.F.C. language. Have your air-speed indicators made to register knots instead of miles so that the R.F.C. can't pinch your stock from the makers. It prevents any chance of the Single Air Service Craze getting through. This chap must have come from the Central Flying School and have picked up some Navy talk there. Starb'd bow, starb'd quarter, starb'd top, starb'd bottom, and so on, but probably he thought starboard below sounded more genteel."

The Casualty murmured on for a bit and then he burst forth again—"At 5,000 feet a strong side current jerked the propeller, gave her a spark, and the Beast picked up well." Why should a side current jerk a propeller more than a plain bump? How did the side current give her a spark? Who is 'her,' the propeller or the Beast, or some she person unknown? Ernest! I'm sunk!!" Then he subsided into more murmuring, only to break out once more "Here! Listen to this! Hark to Towser in full cry!! 'As we cleared'—into dazzling sunlight, mark you,—we were astonished to note that we were hardly 200 feet above another aeroplane. The huge sloping side-planes, the double under-carriage, and the ominous crosses showed him to be a German Extension-Taube.' Oh! Some bird, is this

chap. What in Heaven is a sloping side-plane, and how did he see the under-carriage from 200 feet above, and what is an Extension-Taube, anyway?"

"My good sir!" explained the R.N.V.R. lieutenant—I think from his curiously didactic manner that he must have been a schoolmaster in some previous incarnation—"Have you never heard of University Extension Lectures? Well, an Extension-Taube is a machine designed by students who have attended similar lectures at German Universities, much as our S.E.s, and F.E.s, and R.E.s. have been designed by students who have attended suburban polytechnics. That is why it was below the gun-'bus, and naturally its side-planes (whatever they may be) sloped because the makers built the machine according to the scientists' drawings and couldn't make them fit straight unless they altered the designs. Without doubt the double under-carriage was due to the German Aircraft Factory having sent out two sets of drawings, each for a different type under-carriage, and to the well-disciplined German constructor having obediently fitted both. 'His not to reason why. His but to make 'em buy,' as the poet has it. Proceed, Tertullian!"

"The narrative then proceeds to the fight, though how the blazes a machine which had left the Isle of Wight half an hour before, at the outside, met a Bosche, the Lord, He knoweth"—continued the Casualty.

"Perhaps the Lord He Northcliffe can explain, as it's his bloomin' paper," interjected someone who had been reading Mr. Belloc till the "Mail's" effort eclipsed the interest, "*Continuez vous amuser, monsieur!*"

"Anyhow, the Bosche dived into some clouds," the Casualty went on, "and the gun-'bus after him. The pilot got anxious about his petrol supply and 'advised close quarters'—don't seem to me that the pilot need have advised anything. He could please his blessed self. Here! Half a minute! Here's a gem of purest ray serene. *Attendez, mes enfants.*"—"We met the Taube in the cloud, and passed at such close quarters that our right upper plane carried away a strut of his under-carriage, and was twisted in the process"—Did he, the brute?—"We blazed away in one another's wake with carbines." Now, I ask you again, is it 'as done'?"

"I can only assume," suggested an aeroplane maker who had spent the day arguing over factors of safety with an Admiralty stress-merchant, "that the designer of the gun-'bus must have succeeded in producing an aeroplane which somehow succeeded in flying in spite of coming up to the Government's demands in the way of spar dimensions. Otherwise, I'm jiggered if I can see how any normal wing-tip spar could carry away a chassis strut, even if it did twist in the process. As to the question of both machines being in one another's wake, I must refer you to that proposition of the late Mr. Euclid dealing with two bodies occupying the same space at the same time, and also to Sir Boyle Roche's remark about one body being in two places at once, which is the converse thereof."

"Now we come to the real blood, hair and teeth part of it," said the Casualty. "'I saw the Taube set about shoving his nose right over us. At the same time he let out a clumsy grapnel from which dangled a number of what appeared to be contact grenades. To avoid this crossing manœuvre was a matter of life and death.' What a master of phrase this johnny is, ain't he? 'The Hun anticipated our sudden outward turn in time to alter his course accordingly. We hadn't left the outer side of our steep wing-tip when he was over us'—I say, which was his 'steep wing-tip,' was it the one he twisted against the other chap's chassis, or what, and why did he only want to leave the outer side of it?"

"The grapnel dashed against an aileron, bounced back, dropped a few grenades into space, and then seemed to cling to our upper plane in a sort of way"—

only in a sort of way, mark you, not the real thing—"I had leapt along the body in a moment, and, assisted by a tilt of the machine, threw off the grapnel, and exploded the grenades with my pistol"—stout fellow that, a truly gallant lad, but whose body did he leap along, was it the pilot's?"

"There was a loud explosion, a dazzling flash, and an air bump which jolted us leftwards, but which did not disturb our necessary equilibrium,' and so forth and so on, and 'All that was left of the grapnel and the grenades went circling earthwards to frighten some innocent Continental villagers.' Oh My most fat and most sacred Aunt! He's got to the Continent, has he? On a non-stop from Salisbury Plain via the Isle of Wight, and he has been fighting all the way, and he hasn't landed at R.F.C. Headquarters to report arrival, and—"

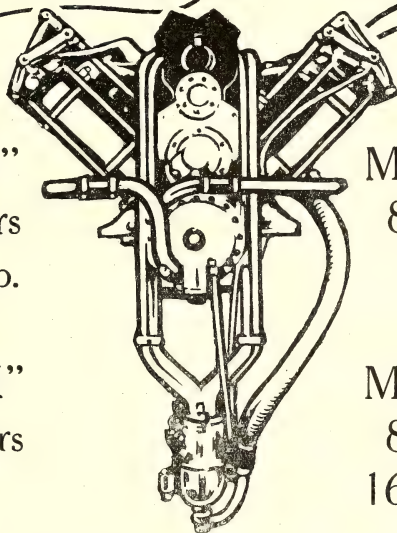
The Casualty collapsed and slid limply out of his arm-chair onto the floor. Kind friends flocked round, a little artificial respiration was administered, harmless necessary stimulants were fetched, and the victim of modern journalism, who was already the victim of the "real thing" in aerial warfare, was gently lifted back to his seat and recomposed for his fell task. After a moment's rest he went on:—

"The engine was now throbbing ominously. The pilot gave her three minutes to live. It was time for desperate measures.—He might have guessed that, silly ass, without gassing with the pilot.—The German was now circling in an endeavour to bomb us. We steered out of three nasty blobs of high explosive, and by a strenuous climb managed to get a shade above him before he had estimated our tactics.—Strenuous three minutes that engine was having, wasn't it? Here we go again. Yoicks! Gone Away!—Turning down wind we bore due at him from a distance of not more than 300 yards. Seeing that our speed was well on to 120 miles an hour, the Hun did not have much time to figure it all out.—Of course, the wind-speed wouldn't affect the Hun, would it? Can't you see him sitting up and taking notice, and trying to count up on his fingers how long the gun-'bus would take to ram him? 'We saw him hover for just an instant.'—Did we? Those Extension Lecturers of yours must have discovered some new anti-gravity scheme for Huns.—'It was enough to show his indecision. He circled inwards, almost in a straight line, but not soon enough to escape us.'—Now, again, I ask you, how does one circle in a straight line?"

"Ah!" said the Last of the Nuts, cheerfully, "you've never tried walking along a chalk-line at Vine Street at 3 a.m., have you? I'm told that I have been known to do a complete loop, although I was following that chalk-line religiously, and had persuaded a fat and friendly sergeant to sit on the end of it to keep it from waving about."—The Last of the Nuts has been running a munitions factory and working eighteen hours a day. Even a doctor who was blind in both eyes and deaf in his off, or stethoscope, ear, would refuse him for active service, and he has had two goes of pneumonia and pleurisy through overwork.—Hence, when a dear old thing at Brighton spotted him convalescent and lounging beatifically and beautifully on the front and asked him what he was doing for his King and Country, he replied languidly: "Madam! At the very beginning of the War I bought a dachshund, and there isn't a thing the Germans do that I don't thrash that dog for." Which is the genuine original of a story since popularised and spoiled in several papers.

Meantime, the Casualty read on how the "Hun" lost his nerve and "went into a nose-dive when we were so close that we heard the noise of his engine as it complained at the control. Our machine bumped upwards on the air bump of the Hun's evolution.—D'you

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ERNEST B. H. LANDER, 1915.

know, that's funny?" said the Casualty. "I've never received any complaints from my engines about their controls. And, anyhow, when the Bosche johnny dived I should have expected a down-drop, not a bump upwards. Still, funny things do happen in the papers. Don't they? But, hark! Here we have the final *débâcle*.—At the same moment I dropped on him all the missiles I could grasp in that instant!—Such as the pilot's pet pipe, and the lunch-basket, I suppose,—anyhow a grenade bust the Bosche's bonnet, and 'he crashed downwards a burning wreck,'—in the best style of the magazine short story.

"Now we come to the weepy bit, I suppose," said the Casualty. "Oh! No.—By this time two of our cylinders had chuffed out—I say, you chaps, what's 'chuffed out?'"

"That's merely onomatopœic journalese," said the R.N.V.R. officer, "intended to give an air of artistic verisimilitude to an otherwise bald and unconvincing narrative—as the late lamented W. S. Gilbert said,—'snuffed out' like a candle, 'chuff-chuff'—imitation steam-engine, very difficult! Quite a fair effort for a newspaper chap."

"Anyhow," said the Casualty, "here we go,—'Luckily we had just spotted an open patch in the clouds'—to land on, I suppose,—and as we had no way of telling our course during the fight we were by no means sure that we were really on the right side of Belgium.—Silly convention, being on the right side of Belgium, what? However,—'Going down wind we made for a stubble field and got in nicely.'—Silly ass to get in down wind. Ought always to do it up stream. Still,—'There lay the Taube, a charred and tangled wreck'—I knew we'd strike the weepy bit soon,—'There was nothing left of the Hun airmen but their identity discs clinging to some shapeless bones. We thought of the fortunes of war and how easily the situations might have been reversed.'—Impossible, my good sir, while we have machines which will fight all the way from the Isle of Wight to Flanders and do most of it with engines missing all over the shop, or while we have 'airmen' who will run along bodies and explode bombs with revolvers. And you know there are people read this sort of thing and believe it all."

A SUGGESTION.

It was noted last week that Rear-Admiral Mark Kerr, R.N., had been received by the King. Evidently Admiral Kerr has returned from Greece on sick leave, for he has recently had a very severe illness, and it would appear that the climate does not suit his constitution. That being so, it seems obvious that his knowledge of aviation and of controlling men could be of use to the R.N.A.S.

No officer in either Service in this country of Admiral Kerr's seniority has had anything like as much experience of aviation. Before he went to Greece he flew continually as passenger with the late Gustav Hamel, and after he took his certificate on one of the Greek Navy's Sopwith seaplanes the Admiral continued to fly regularly, generally going out alone, sometimes taking a passenger, but hardly ever being himself the passenger.

Leaving his age out of consideration, Admiral Kerr is a really good pilot, and my authority for saying so is the late Collyns Pizey, who made the statement in a personal conversation when he was in England a month or so before his death. Commander Pizey was one of the best judges of a pilot who ever lived, and his opinion is worth having, for it was given without *arrière-pensée*.

One of the chief complaints of people in both Flying Services is that some of the senior officers have not had much personal experience of handling aeroplanes and so are not able to judge whether a machine is all their technical advisers state it to be—either for bad or good—nor

"Yes, old dear!" cut in a tired looking officer, with the liver-wing and capital O badge of an R.F.C. observer on his tunic, "but the particular, private and personal Hell of it all is that some of them are going to believe that it was written by one of us. It is quite bad enough having to go around with everyone asking why you've only got half an R.F.C. badge, and feeling like a cock-sparrow who has been altered—"

"The correct heraldic expression," interrupted the didactic R.N.V.R. officer, "in relation to a conventionalised design of that nature is, I believe, that it is displayed 'with a difference.'"

"Well, anyhow," said the observer, "it wasn't written by a pukka soldier—of course one never knows what some of your comic R.N.V.R. (attached R.N.A.S.) people may have done, but—"

"But you've missed the best joke on the page," soothingly remarked on old pilot, who has been driving ambulances in France because the Services don't want people who wear glasses, even if they have spent a fortune on aviation and have built more machines than some modern chiefs of aeronautical departments have ever seen.—He leant over and pointed to the space above the leading article, wherein one read in large letters:

"THE 'DAILY MAIL.' THE PAPER THAT DEVELOPED AIRMANSHIP."

"Hot airmanship," suggested a frivolous young officer.

"Pity they didn't pay some attention to Aeronautics and Aviation, they might have got something done if they had gone about it intelligently, instead of simply doing advertising stunts," said a mere civilian.

But, somehow, that startling claim to have "developed airmanship" seemed to rankle in the minds of the Service members, for at intervals one might have caught snatches of conversation such as—"What the devil have they ever done to strafe the Factory and to get us better machines?" or "What have they done to keep the aeroplane industry on its legs?"

And after a little while, having an office in the vicinity, and work to be done, I left the Club to talk it over by itself.—C. G. G.

are they able to judge if weather conditions are suitable for starting out with specific objects in view or not.

In the case of Admiral Kerr, his practical experience in the air is actually far greater than that of the majority of junior officers in the Flying Services, and it is earnestly to be hoped that his experience will not be wasted. If an Admiral must be in command of the R.N.A.S., surely he should have air as well as sea experience. Admiral Kerr has for years been known as an exceptionally able and daring seaman—which means that he has a deep knowledge of the weather. He has, moreover, a genius for handling men. Every officer I know who has ever served under him would follow him over the end of the earth—and yet he is a strong disciplinarian.

I have not had the honour of meeting Admiral Kerr since before he went to Greece, but he cannot have changed his methods much in the interim, so I may perhaps be permitted to suggest that, over and above the qualifications mentioned, it has always seemed to me that he is particularly suited by nature to deal with the peculiarly enthusiastic but somewhat turbulent temperament from which most aviators suffer.

Add these qualities to his aeronautical experience and it seems that no one else of his seniority has anything like the same qualifications to command the R.N.A.S.

If, in addition, Mr. Churchill could represent the R.N.A.S. in Parliament, with the Secretary of the Royal Aero Club as "Chief of Staff," we might get something done.

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GREAT BRITAIN.

From the "London Gazette," September 21st, 1915.

ADMIRALTY, September 16th.

ROYAL NAVAL AIR SERVICE.—Proby, flight sub lieuts. confirmed in rank of flight sub-lieut.: W. H. E. Campbell. March 29th. G. G. Ommaney. May 5th. D. Gill. May 21st.

Proby, flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service: R. A. Reid. March 20th. H. S. Bompas. May 8th. P. C. D. Douglass. May 15th. O. A. Butcher. May 17th. B. Gregg. May 22nd. W. H. Sharpe. May 22nd. R. W. Lane. May 25th. H. F. Mills. May 25th. J. H. D. Grant. June 1st. T. F. Morris. June 8th. J. Wann. June 8th. S. Bell. June 9th. E. A. O. Auldjo-Jamieson. June 14th. S. O. Smith. June 14th. H. D. Hyde. June 18th. W. P. D. C. Scott. June 18th. N. E. Stirling. June 18th. A. T. Moore. June 25th. L. Radmore. June 25th. A. C. B. Geddes. June 30th. C. R. Carr. July 9th. P. Laing. July 9th. M. G. Gill. August 7th. W. G. Pigott. August 7th.

September 17th.

ROYAL MARINES.—Maj. and Bt. Lieut.-Col. (temp. Col.) F. H. Sykes, 13th Hussars (wing com.), Royal Flying Corps), graded temp. commn. as Colonel Second Commandant. July 24th.

ROYAL NAVAL AIR SERVICE.—Temp. Col. Sec. Commr. F. H. Sykes, R.M., graded as temp. wing captain in command of Air Service Units. July 24th.

* * *

WAR OFFICE, September 21st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) W. N. M. Dunkley confirmed in rank.

* * *

From the "London Gazette" Supplement, September 22nd, 1915.

WAR OFFICE, September 22nd.

REGULAR FORCES.—ATTACHED TO HEADQUARTER UNITS.—Staff Capt.—Lieut. E. P. Graves, R.A., from a flying officer, Royal Flying Corps, Military Wing. September 7th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Sept. 2nd: Lieut. P. Le G. Gribble, Hants Yeo., T.F.; Lieut. G. D. J. Grune, R.F.A., T.F.; Temp. Sec. Lieut. O. Hughes, Worcs., and transd. to Gen. List; Temp. Sec. Lieut. J. Sowrey, R. W. Surrey, and transd. to Gen. List; Temp. Sec. Lieut. E. R. N. Hyde, Beds., and transd. to Gen. List; Temp. Sec. Lieut. G. L. Pitt, York and Lanc., and transd. to Gen. List.

The appointment of Lieut. S. H. Hewett, Staff, S. African Permt. Force, as an asst. eqpmnt. officer, and to be temp. lieut., in "Gazette" of September 6th, cancelled.

* * *

From the "London Gazette" Supplement, September 23rd, 1915.

WAR OFFICE, September 23rd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Com.—Bt. Lieut.-Col. W. S. Branchler, R.A. August 25th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: V. M. Grantham, W. T. L. Alcock.

To be sec. lieuts. (on prob.): September 5th: W. H. Furlonger, G. S. Sansom.

* * *

From the "London Gazette," September 24th, 1915.

WAR OFFICE, September 24th.

REGULAR FORCES.—GENERAL STAFF OFFICERS.—1st Grade.—Maj. B. D. Fisher, D.S.O., 17th Lts., and to be

temp. lieut.-col. whilst so employed, vice Temp. Brig.-Gen. A. F. Home, D.S.O., 11th Hrs. August 28th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—Sept. 7th: Sec. Lieut. R. I. Kirtton, K.O.S.B., and seconded; Sec. Lieut. W. T. L. Alcock, S.R.; Sec. Lieut. V. M. Grantham, S.R. Sec. Lieut. J. M. J. Kenny, A.S.C. September 9th.

* * *

From the "London Gazette" Supplement, September 25th, 1915.

WAR OFFICE, September 25th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): A. W. Briggs. August 30th. R. A. Logan. September 1st. G. D. Etches. September 13th.

NAVAL.

The following appointments were notified at the Admiralty on September 23rd:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., all to date September 22nd: H. S. Brown, S. T. Dockray, and A. V. Taylor.

Temp. Lieut. (R.M.) G. R. G. Daglish, Temp. Lieut. (R.N.V.R.) F. M. Fox, Temp. Sub-Lieut. (R.N.V.R.) E. F. Beaumont, and Messrs. E. E. Deans, O. Champion, J. J. L. Patterson, and D. Knowles, entered as probationary flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S.

Temp. Proby, Flight Sub-Lieut. A. P. Hadow granted a temp. commission as lieut., R.N.R., with seniority September 22nd.

* * *

The following appointments were notified at the Admiralty on September 27th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut., R.N.V.R., H. C. Morris entered as Acting Flight Lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date September 25th.

The following have been entered as prob. Flight Sub-Lieuts. for temp. service and appointed to the "President," additional, for R.N.A.S., to date as mentioned: Temp. Sub-Lieuts., R.N.V.R., J. Simson, L. Barr, S. T. Baker, and G. E. Baxter, September 25th; Messrs. A. J. Long, and E. W. Carlton-Williams, October 2nd.

[The scarcity of R.N.A.S. appointments gives one to wonder whether the supply of suitable candidates has run out, or whether things are in such a tangle under the new régime that nothing can be got past the officials in Whitehall.—Ed.]

* * *

The Secretary of the Admiralty announced the subjoined casualty on September 21st:—

Previously reported Missing, now reported Killed.

Flight Lieut. David Keith Johnston, R.N. (August 10th).

* * *

The Secretary of the Admiralty announced the following casualty on September 23rd:—

KILLED.

Probationary Flight Sub-Lieut. Douglas A. Hay, R.N. (September 20th).

* * *

The Secretary of the Admiralty announced the following casualties on September 25th:—

SERIOUSLY INJURED.

Lieut. Alastair P. Hadow, R.N.R., late Probationary Flight Sub-Lieut. R.N. (Date of casualty September 24th.)

EXPEDITIONARY FORCE.

WOUNDED.

Lieut. Frederick Russell, R.M.A., Anti-Aircraft Section (August 21st).



ERNEST B. H. LANDER, 1915.

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The following appeared in the obituary columns on September 22nd :—

CROUCHER.—From injuries received in a flying accident on manoeuvres in Bignor Park, Sussex. William Croucher, Flight Sub-Lieut., R.N., aged 19. Dearly loved and deeply mourned by all who knew him.

* * *

The following appeared on September 25th :—

PRITCHARD.—On Tuesday, the 21st Sept., at 1, Sloane Court, London, S.W., the wife of Flight Sub-Lt. John Edward Maddock Pritchard, R.N., of a son.

* * *

The "Gazette" of September 21st notes the appointment of Major and Brevet Lieut.-Colonel F. H. Sykes, 15th Hussars, and a Wing Commander Royal Flying Corps, to be, first of all, Colonel Second Commandant Royal Marines, and then to be a Wing Captain Royal Naval Air Service in command of Air Service units. The appointment is one of the most complicated arrangements one has seen, even in this extraordinary war. On Service seniority Colonel (or Captain) Sykes is a cavalry major, on special promotion he is a brevet lieut.-colonel of the R.F.C., and on his active service grading he is a post captain in the Navy—ranking with and before a full colonel in the Army—and he is a colonel of Marines at the same time. Being temporarily a Marine his correct title is presumably "Colonel," as all Marine officers in the R.N.A.S. use their military and not their naval titles.

Colonel Sykes was Officer Commanding R.F.C. in its early days when it was controlled by General Henderson as Director of Military Training and before the Department of Military Aeronautics came into being. In this capacity he did an enormous amount of organising of high value, and his extraordinary capacity for work enabled him to get the Corps into something like a working system long before there were sufficient aeroplanes to make it an effective force. The system he then instituted has stood the crucial test of indefinite expansion admirably.

During the earlier part of the war, when General Henderson took personal command of the R.F.C. in the field, Colonel Sykes was on the Staff and did not command any section of the force he had done so much to build up. His new appointment seems to indicate that he takes command of shore-going units of the R.N.A.S.—and possibly of seaplanes co-operating with land machines—in some part of the world other than Flanders.

* * *

At Canterbury on September 25th, Joseph Henry Baker was charged with unlawfully wearing a uniform authorised

by the Admiralty. Baker arrived at Littlebourne representing that he was from one of the Admiralty aerodromes, and was arranging for the landing of two "hydroplanes" (*sic*). The villagers felt highly honoured at the favour. Lodgings were procured for the officer, a meadow was placed at his disposal, and a landing-place was chalked out and carefully guarded. Prominent people from the district and practically every villager waited patiently for the "hydroplanes" to arrive, but in the evening Superintendent Herd arrived instead, and arrested Baker.

Accused, who had been previously convicted, was sentenced to "six months' hard."

No one seems to have wondered why hydroplanes should want a field to land in.

MILITARY.

The following despatch from Field-Marshal Sir John French was received on September 21st :—

(1) The enemy's artillery has increased its activity on our front during the past two days. We have replied effectively to the hostile bombardment. On the 20th part of the Forest of Houthulst was set alight by our artillery fire, causing a big explosion.

(2) On September 19th there were nine air combats, two hostile aeroplanes being driven to the ground in the German lines. One fell enveloped in flames, and the engine of the other was set on fire.

* * *

The following message was received on September 24th from Field-Marshal Sir John French :—

(3) Our aircraft yesterday carried out a successful raid on the enemy's communications near Valenciennes. A railway train was hit and the line cut in several places.

* * *

A message received from Sir John French on the evening of September 26th says :—

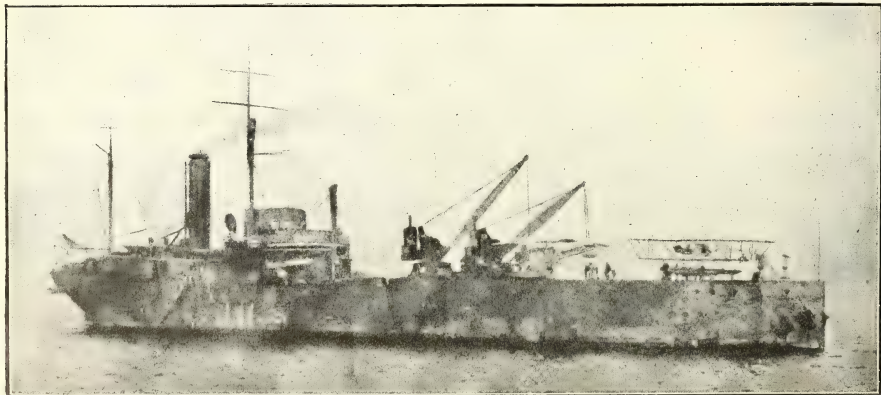
Our aeroplanes to-day bombed and derailed a train near Lofres, east of Douai, and another which was full of troops at Rosult, near St. Amand. Valenciennes Station was also bombed.

[This was in connection with the big advance which penetrated the enemy's lines to a depth of 4,000 yards, round Loos, towards Lens.—Ed.]

* * *

The following casualty in the Expeditionary Force was reported on September 23rd under date September 17th :—
Previously officially reported Missing, now unofficially reported Prisoner of War.

Maclean, Sec. Lieut. W. A., Black Watch, attd. Royal Flying Corps.



H.M.S. "ARK ROYAL."—Seaplane-carrier, recently at the Dardanelles—from a photograph published in an American paper.—
One goes from home in these days for news and pictures.

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The following casualties were reported on September 25th under date September 20th :—

MISSING.

Nixon, Sec. Lieut. W. H., King's Own (R. Lancaster), and R. Flying Corps.

Stott, Capt. J. N. S., 5th Dragoon Guards, attd. R. Flying Corps.

* * *

The following casualties were reported on September 25th under various dates :—

Previously officially reported Missing, now unofficially reported Killed.

Adamson, Capt. W. C., R. Flying Corps.

Previously officially reported Missing, now officially reported Prisoner of War.

Broder, Lieut. P. A., 5th Worcestershire, and R. Flying Corps.

* * *

The subjoined casualty among the Indian Forces was officially reported on September 25th, date not given :—

PERSIAN GULF.

Previously reported Missing, now reported Prisoner of War.

Atkins, Capt. B. S., 11th Rajputs, attd. R. Flying Corps.

* * *

While flying at Hounslow Heath on September 24th an aeroplane piloted by Captain Blood caught fire. He managed to come down safely, and escaped from the machine with his clothing in flames. He was immediately conveyed to hospital, and, although badly burned, it was hoped that his life would be saved. Captain Blood is the son of General Sir Bindon Blood, who distinguished himself highly in India.

An entirely different report states that the machine was an S.E.4 (R.A.F. design), and came down in an uncontrollable spin. It caught fire after striking the ground. A later report states that Captain Blood died on Sunday last from his injuries.

* * *

Mr. Percival Phillips, the "Daily Express" correspondent with G.H.Q., B.E.F., writing on September 20th says that the R.F.C. pilots have had 40 fights in the air in 18 days. Four enemy aeroplanes are known to have been destroyed in these fights, and in all the others the enemy have been chased back to their own territory. One pilot, who must be nameless, has brought down six Boschies himself, single-handed, since he has been out on active service.

The official record for September up to the 18th reads thus :—

Date	Number of Encounters	Date	Number of Encounters
1st	2	10th	5
4th	1	11th	1
5th	9	12th	5
6th	2	13th	4
7th	5	14th	1
8th	2	18th	2
9th	1		

* * *

A British soldier in Belgium, whose letter was reproduced in the "Times," says :—

"The airmen are a new race of human beings. Five of the 'super-avian' birds yesterday evening utterly distracted the Hun batteries along our front. The air spaces above were spotted with shrapnel puffs, regularly, in the proportion of currants to a well-made 'plum-duff' (I can think of no other better illustration) and back and forth passed the hawks with the most perfect and practical indifference. You hear the muffled 'plop' up aloft about eight seconds after you have seen the sparking flash of the bursting shell; you have even seen the graceful

rounded curl of the shell-smoke form and change shape before you hear the 'plop.'

"When the batteries are really busy you see flash upon flash away up there, four and five together, and soon the flashes merge into a wild confusion of irregular 'plops.' The hawks, if low down, and in great danger, dodge the shells by continually shifting their angle of flight, darting about here and there, and it must need a cool head, and hands and feet which work automatically, up there.

"We have seen flights where it seemed impossible for the hawk to miss a shell, and then, when the hawk had reached safety, we have seen him deliberately turn back and return to the same danger zone. It looks like bravado, but it is not. That hawk had not finished the task he had set himself to finish, so he went back. One hawk did this five times while we watched from the front trench, and when he finally decided to go home to roost, and regained safety, it was a great relief to cheer him, and I hope he heard that bottled-up explosion of relief we gave him.

"In the evenings, after sundown, by twilight, and against the sunset pinks and yellows, the hawks, from all points of the Hun front, come home to roost. Gliding in, with engines stopped, they swoop in long, gradual slauts. And when you think what they have been through, your thoughts break down in a shamed confusion. It does not seem fair, in your ignorance, complete and dense, even to think of their dangers.

"Talk about mastery of the air! The air is like the sea, in its unknown dangers which call for certain inborn qualities, and the master of the one can be as easily master of the other. That is just my belief. At any rate, our bird-men treat the Hun bird-men with as much inborn superiority as our seamen do the Hun seamen. If a German hawk ever passes over us, he is a hunted and harried, unhappy thing, which very soon 'scoots' for home and lagerland. You never see them at their ease and serene."

FRANCE.

The afternoon communiqué of September 21st says :—

Last night one of our aeroplanes bombed the junction at Amagne Locquy, east of Rethel.

* * *

The evening communiqué of September 21st says :—

A squadron of nineteen aeroplanes this morning bombarded the station at the Bainsdorf junction, east of Morhange. One hundred shells were dropped on the buildings and stationary trains, which were seriously damaged.

* * *

The afternoon communiqué of September 22nd says :—

Our aviators bombarded the enemy's cantonments at Middelkerke, and also a train between Bruges and Thourout. A party of eight aviators effectively bombarded the railway station at Conflans, on the line from Verdun to Metz.

* * *

The evening communiqué of September 22nd says :—

As a reprisal for the bombardment by the Germans of open towns and the civilian populations of France and England, a squadron of aeroplanes this morning left to bombard Stuttgart, the capital of Württemberg. About 30 shells were dropped on the Royal Palace and on the station. Our aeroplanes, which were cannonaded at different points on their long journey, returned uninjured to their base.

* * *

The communiqué of September 23rd says :—

French aeroplanes bombarded the railway stations of Offenbourg, Conflans, and Vouziers, as well as the enemy cantonments at Langemarck and Middelkerke.

* * *

A French official communication received on September 23rd by wireless says :—

A despatch from Cologne pretends that the aeroplanes

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which bombarded Stuttgart carried German identification marks. This assertion is absolutely false. The aeroplanes carried prominently the cockade, with the French colours. Besides, they were bombarded frequently from the German lines both going and returning.

Two German aeroplanes travelling from France flew over Swiss territory and passed over Courgeny; one of them dropped a bomb, which exploded.

* * *

The following semi-official description of recent operations in the Dardanelles, published on September 24th, is given by the French eye-witness :—

While during this fortnight the Germano-Turkish aviators have not appeared once above the French troops, our air squadron has made daily reconnaissances, and some sorties in force, which resulted in effective bombardments, on August 20th, of the landing-stages and provision depots on the Bay of Akbachi Sliman, on the European side, opposite Nagara, shortly before sunset. A landing-stage was hit by several bombs, and a shell of 15 cm. sank a large transport anchored in the bay. On August 30th there was another sortie in force by our air squadron, and a bombardment of one of the Turkish headquarters and of a workshop for the repair of arms established at a farm near Chanak. As a reward for this successful activity on the part of our aviators the General Commanding the Expeditionary Force in the East has mentioned the squadron in his Army order, and has conferred on it the Croix de la Guerre.

The work of our aviators over the bay of Akbachi Sliman, the principal landing point for provisions and Turkish reinforcements in the southern zone, has been successfully completed by the fire of the fleet. Several vessels have been sunk by this means by our Allies, and the Turks for eight hours a day have had to abandon the use of this landing-stage.

* * *

The afternoon communiqué of September 25th says :—

One of our air flotillas dropped some forty bombs on the Sablons station at Metz yesterday.

* * *

It was reported from Paris on September 24th that Lieut. de Maudhuy, of the French Dragoons, son of General de Maudhuy, was piloting a biplane at the avia-

tion camp at Toul on the 23rd, when the machine capsized, the officer being killed on the spot. Lieut. de Maudhuy, who had just finished his training as pilot at Chartres, had earned mention earlier in the war for one of the finest deeds recorded, when as observer he and his pilot attacked six German aeroplanes at once.

GERMANY.

The communiqué of September 22nd says :—

An English aeroplane was shot down by a German battle aviator near Willerwal, east of Neuville. The pilot was killed and the observer, who was wounded, was taken prisoner.

* * *

The communiqué of September 23rd says :—

Favoured by the fine weather, there was vigorous artillery and aerial activity on both sides along the entire front.

North of Ste. Menchould an enemy aeroplane was brought down by our fire in a burning condition. Another aeroplane was forced to descend after an aerial battle south-east of Vouziers. The occupants were taken prisoners.

Above Pont à Mousson a German aviator, fighting against two French airmen, shot down one of them. The aeroplane fell in a burning condition between the German and French lines.

* * *

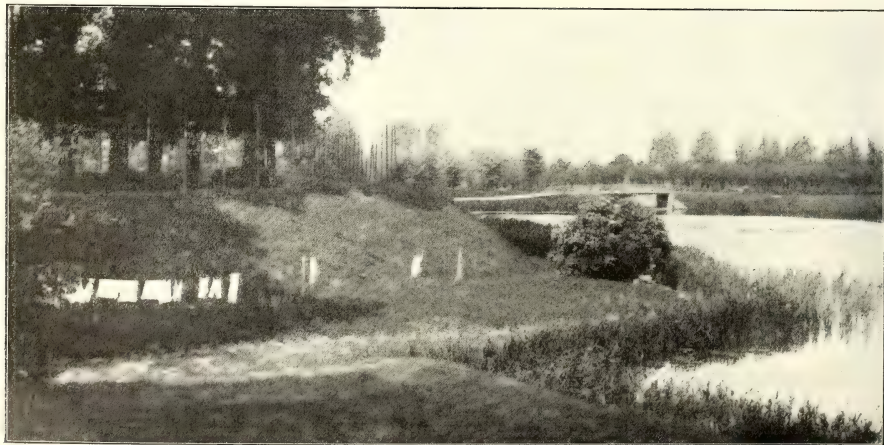
A Berlin official telegram of Sept. 22nd states :—

At 8.15 this morning enemy aviators with German marks on their aeroplanes attacked Stuttgart and dropped several bombs on the town, killing four persons and wounding a number of soldiers and civilians. The material damage was quite unimportant. The aviators were fired at by our anti-aircraft guns and troops, and disappeared in a southerly direction at 8.30.

Owing to the fact that shortly before, at 7.45 a.m., the military authorities had been informed of the approach of a German aviator, the population could not be warned in good time. This German aviator arrived over Stuttgart at 9.30 and was fired upon from below for a short time until he was definitely recognised as a German. He landed unhurt near the town.

* * *

The communiqué of September 24th says :—



Another corner of the Fort of Wierickeschans, where various R.N.A.S. and R.F.C. officers are interned in Holland.

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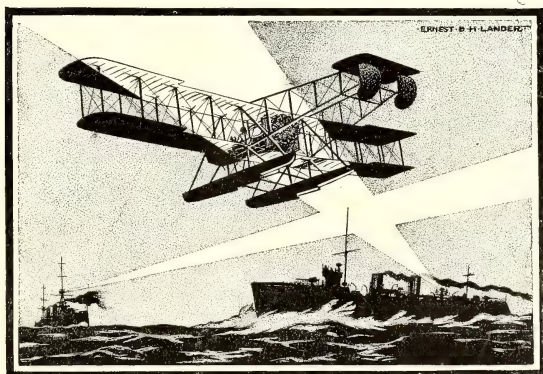
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In the course of yesterday artillery and aerial activity has increased along the entire front.

On the coast we shot down a British aeroplane, capturing the pilot.

* * *

The communiqué of September 26th says:—

In air battles our aviators achieved successes. One of our warplanes shot down an aeroplane west of Cambrai. South of Metz Lieutenant Boelke, while on a trial flight, shot down a Voisin aeroplane. Flight-Sergeant Boehm went up to repulse an attack on Freiburg by a squadron of three French warplanes. He shot down two of them; only the third escaped.

* * *

The communiqué of September 27th says:—

Three enemy aeroplanes, among them a great French battle aeroplane, were shot down yesterday in aerial battles north-east of Ypres and south-west of Lille, and two more French aeroplanes were brought down in Champagne by artillery and rifle fire.

Enemy aviators bombarded the town of Peronne, killing two women and two children, and severely wounding ten other citizens.

ITALY.

The communiqué of September 24th says:—

An enemy aeroplane dropped three bombs on Tonnesa, but no one was injured and no damage is reported.

* * *

It was reported on September 21st that Signor D'Annunzio flew over Trent on September 20th, throwing from his aeroplane an enthusiastic address to the inhabitants, dated from the sky of the Fatherland.

[Does Annunzio mean the same thing as "annonces," or advertisement? Certainly the mincing, mouthing little Dago verse-slinger (of recent photographs) seems a fairly successful aerial bill-sticker, at any rate so far as concerns announcing himself.—Ed.]

* * *

The two attacks made by flying machines on Vicenza on 15th and 17th insts. were effected as usual from the enemy's flying base at Riva, where it has now leaked out that considerable damage was recently done to the palace used by the Commandant and Staff as headquarters, in the course of one of the Italian naval air raids.

During the first hostile visit to Vicenza a corner of a church was damaged and there was found a metal box full of sand with "clear out" in German painted on it, which is supposed to have been an attempt at a joke, as no other reasonable explanation could be attributed to it.

The second attack was more fruitful to the enemy, one bomb failing to explode on the Prefect's apartments, and another hurting two washing dames on the bank of the river. Some other slight casualties are reported.

* * *

One of the four bombs dropped on Bassano—lightly touched upon by General Cadorna in the news served out to us on 18th—fell onto the old wooden bridge spanning the turbulent Brenta. Napoleon's troops also vented their destructive instinct on it, and now its substitution by a stone structure voted some time ago by the Town Council has been hastened on by the demolition of the 18th

* * *

From the letter of an Army Chaplain with some Alpines at 3,000 metres above sea level a glimpse of Austrian airshipmanship at high altitudes is obtained. He writes:—"Yesterday an enemy biplane flew over us. It was fine to look upon and impressive and a mighty pleasant spectacle to have contemplated peacefully on its majestic and stable progress. Such being neither convenient nor prudent, our men pursued it with violent rifle volleys which caused it to climb rapidly and leave the neighbourhood. It had been kind to us dropping not even a message, intent only

on spying out the land. I fell to thinking of poor Chavez whom I saw doing just such a flight when he lost his life and gained his crown of victory. Little did I think then to have ever seen one of the perfected progeny of the new science dedicating itself to destroying its human inventors."

* * *

Zurich papers announce the escape from Hospenthal of two more French aviators interned there, Sergeant Madon and Corporal Chatelain; also their capture near the Rhône glacier. The two made forced landing in the Jura hills in the winter.—T. S. HARVEY.

RUSSIA.

The communiqué of September 24th says:—

A German aeroplane threw bombs on Schlok (19 miles west of Riga). It was bombarded by our troops, and came down rapidly behind the German trenches.

* * *

The communiqué of September 24th says:—

German aviators appeared at the Gulf of Riga, but were driven off by our seaplanes.

BELGIUM.

An Amsterdam message dated September 25th says that Allied aeroplanes assisting in the bombardment of Zeebrugge on September 24th were heavily fired at, but were not hit. One German aeroplane was seen flying to and from Zeebrugge to the British ships and a captive balloon was seen above Zeebrugge. At 10.30 a.m. the British ships retired.

It is reported that on September 22nd the Allied aviators attacked important points of the German positions. Several heavy explosions were heard. There is a rumour that a German anti-aircraft battery was destroyed by bombs dropped by an aviator who flew at such an altitude that the German shells burst short.

* * *

It was reported from Amsterdam on September 27th that Allied aviators dropped bombs on Bruges and Ostend on September 26th, causing considerable damage.

SERVIA.

A message of September 21st says:—

"The only official news from Nish of a military character is the occurrence of frequent reconnoitring by enemy aeroplanes in the vicinity of Tekia, a small Serbian town opposite Orsova, near the Roumanian frontier, where the Germans may be endeavouring to effect a crossing of the Danube."

[There seem to be numerous curious things happening round that corner of the Servian, Roumanian, and Bulgarian frontiers just at present. The map is worth studying.—Ed.]

* * *

A message from Nish dated September 24th says:—

"A hostile aviator flew over Aliona, and was descending the Danube when our artillery fire obliged him to cross to the Roumanian side. Immediately afterwards the same thing occurred with another enemy aviator."

SWITZERLAND.

A message from Berne, dated September 23rd, says that it is officially admitted that two German biplanes flew over the Porrentruy district in Swiss territory on September 21st, and were fired at by Swiss frontier guards. One biplane dropped a bomb, which fell near a house, fortunately injuring no one. The Swiss Government has protested to the German Government.

* * *

Mr. H. Patrick Devitte, the "Daily Express" correspondent at Geneva, reported on September 10th:—

"I learn from a reliable source in Friedrichshafen that the German Headquarters Staff admit the loss of thirty-eight (38) Zeppelin and nine (9) Parseval airships since the war began up to August 1st, 1915. Since this date a

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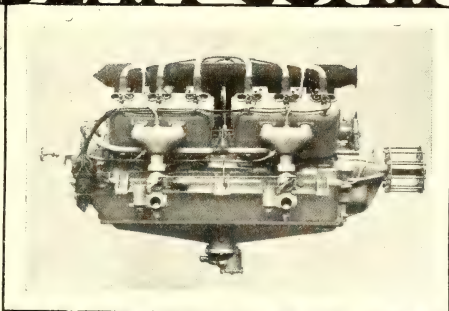
8 CYL.

150 H.P.

12 CYL.

225 H.P.

(ILLUSTRATED)

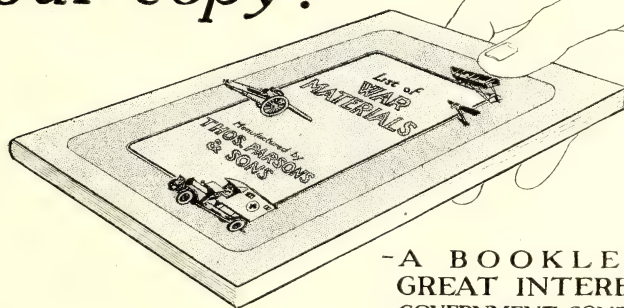


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further report states that two Zeppelins and one Parseval are 'missing.'

"The majority of the airships were brought down by the Allies' aerial guns, and the remainder had 'accidents' while landing.

"The average cost of these airships is over £100,000, while the newest models, I am informed, cost nearly double this sum. Therefore, Germany has lost over £5,000,000 in a year in her airships, bombs from which have killed and wounded 500 persons."

[This, of course, is pure nonsense. Germany has never had 38 Zeppelins to lose since the beginning of the war. She started the war with 12 or 13, and may possibly have built 20 since, and as there are perhaps 12 to 15 of these now in existence, the figures are preposterous.—Ed.]

TURKEY.

A letter from a man of the Signal Co., R.E., at Suvla Bay says:—

"This minute rather an exciting incident happened. A Taube flew over not very high, only about 1,000 ft., purposing, I presume, to drop a bomb on the balloon anchored to the Balloon Ship, and which has been up observing all day. Immediately she was spotted shrapnel was plugged at her and one could quite easily see the shell explode. She wasn't hit, even though a machine-gun and about 100 men all opened fire. She may have a few holes in her, though one can't tell. On her way home she met one of our planes and no doubt got a hot time from her, for the British machine flew over the Taube and the Taube began to descend. Whether hit or not I don't know, for she was by this time over the Turkish lines. Our plane had several shrapnel shells burst above her, but is, as I am writing, flying towards Imbros.

"Later news.—Two aeroplanes are now chasing the beast. I do hope she gets blown into atoms, otherwise we may expect a pretty good dose of shrapnel in return for having dared to fire at one of their old Taubes. Let them do their worst. It is their last stay in Europe."

CANADA.

The "Aerial Age," New York, says:—

"The official military test of the giant aeroplane 'Canada,' the first of the fleet of 'air destroyers,' ordered by the British Government, took place on Tuesday of

last week at the flying grounds in Toronto and resulted in an immediate acceptance of the machine. The details of the test were published in a letter reproduced in the 'New York Times,' written by an aviator who witnessed the tests.

"The "Canada" exceeded all requirements by more than a fifth,' the writer in the 'New York Times' says, 'and was accepted just as it lay on the ground after the final flight. Carrying a load of 2,000 lbs., it rose from the ground with ease and great speed, and when in full flight attained a speed of 95 miles an hour.

"The tests were witnessed by a number of British officers and officers of the Allied Powers, and were under strict military supervision. No strangers were allowed inside the flying grounds, and detectives and uniformed police promptly 'moved on' any persons seen loitering in the neighbourhood. Antony Jannus flew the "Canada," both with and without load, and a number of the military men went up. They were very enthusiastic at the end of the test, and said that the "air destroyer" was the greatest machine of its kind ever built."

The description further says that the machine has a span of 80 ft. There are two propellers, driven by two 100-h.p. V-type Curtiss motors. She is a biplane of the "double fuselage" type, and is fitted with a Sperry stabiliser. It is also said that the bomb-dropping device is partly attached to the stabiliser so as to keep it horizontal and increase accuracy of aim.

It is stated that Mr. J. A. D. McCurdy, of the Curtiss Co., built the "Canada" and "is under orders from the British Government to build an unlimited number as fast as they can be turned out." Mr. Charles M. Manley, formerly with Professor Langley, "watched the construction work for the British."

Further, the "Aerial Age" says:—"Complete the 'Canada' cost about \$40,000," but standardised output will decrease cost and, "The first squadron of twenty, which will be shipped before October, will have cost the British Government about \$610,000."

"Several of the Canadian aviators trained at the flying grounds in this city (Toronto) will accompany the 'Canada'. . . . Aviators will accompany each one sent over, and it is expected that there will be at least two



This group, photographed in front of a Thomas biplane at Ithaca, N.Y., shows (left to right) Messrs. Frank McGill, 100-yards and one mile Canadian swimming champion; George Hodgson, 100-yards Olympic swimming champion; Frank Burnside, the instructor; Philip Fisher, and Hugh Peck.



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aviators for each machine when the 'air destroyer' squadron is fully organised. . . . The officers of the Allies gave it as their opinion that the type would prove much more useful and destructive than the German Zeppelins. They have the mobility and speed of the fastest scouting aeroplanes and can carry a ton of explosives which can be dropped with accuracy, while the Zeppelins are slow and cannot aim their bombs."

[British and foreign readers can believe just as much or as little of all this as best pleases them.—Ed.]

* * *

It is reported that on September 2nd five students passed their final tests at the Curtiss Aviation School at Long Branch, and are now eligible for commissions as flight sub-lieutenants in the Royal Naval Air Service. They are: Gordon Stephens, Fred C. Henderson and George R. S. Fleming, of Toronto; A. C. Courtneage, of Brantford, and C. H. Darley, of Montreal. Messrs. Henderson, Courtneage and Fleming are graduates in applied science of the University of Toronto, and Mr. Fleming has passed the tests of the Aero Club of America for a pilot's certificate.

U. S. A.

According to a telegram received from Los Angeles by the Aero Club of America, twenty American military aeroplanes have just been ordered by the Dutch Government. The first order for six warplanes was placed by the Dutch Government two months ago with the Glenn L. Martin Company, and Captain Visscher and Lieut. Ter Poorten of the Dutch Flying Corps were sent to Los Angeles to put the machines through their tests. Lieut. Ter Poorten flew one of the six machines from Los Angeles to San Diego and back to Los Angeles, a distance of 224 miles, in three hours and twenty-five minutes, without a stop, then both officers flew in one of the seaplanes to a height of 7,500 feet in one hour and thirty minutes. It is said that one of the machines carried half a ton of useful load. These tests were witnessed by Captain Arthur Cowan, in charge of the Aviation Corps at San Diego, California.

* * *

American papers state that an average of fifteen aeroplanes per day are being shipped to Europe by the Curtiss Aeroplane Co., the Burgess Co., the Thomas Co., and the Glenn L. Martin Co.

This means that as many American aeroplanes are shipped to Europe each day as the United States Army and Navy have in commission.

* * *

One of the most comic efforts of the American Press is that which emanated from Reuters, of New York, on September 14th, and runs as follows:—

"According to the newspapers, a fleet of 10,000 (sic) armoured aeroplanes, equipped with machine-guns, searchlights, and a newly perfected bomb-dropping device, is being hurried to completion in this country, Canada, and elsewhere, for use by the British Government in protecting London and the English coast from further attacks by Zeppelins. Fully equipped, the great war planes are expected to fly at a height of 12,000 ft. for four hours. This is 3,000 ft. higher than the usual height of the Zeppelins.

[Some versions say "8,000 feet" higher, though just what the advantage would be in getting either 3,000 or 8,000 feet above the usual limit of one's enemy is not quite clear. Presumably it means that some machines now building in America can reach 12,000 feet if pushed.—Ed.]

[With their revolving searchlights and a signalling system it will be possible, the newspapers declare, to circumvent any attack by German dirigibles on any vital spot along the English coast, and to make it impossible for any Zeppelin to reach London.

[Why should revolving searchlights and a signalling

system prevent Zeppelins from reaching London? What is the matter with ground guns and searchlights?—Ed.]

"As a further protection against Zeppelin outrages, the 'New York Times' announces the completion of hundreds of tiny air scouts, measuring only 30 ft. across the wings, that will be used by the British military authorities for Zeppelin chasing. With a speed of more than 100 miles an hour, says the 'Times,' these little machines will do constant patrol duty, watching, always watching for Zeppelins. They will circle in the higher levels as near the Zeppelin bases as they can get, and the minute they see the giants leaving their sheds they will be off to England to give the alarm. [Very pretty notion. Picture to yourself clouds of scouts over Hamburg, Cuxhaven, Darmstadt, Mainz, Essen, Cologne, and so forth, where the Zeppelins really live. If they can get so far, why not bombard the sheds and come home, instead of carrying hundred-weights of petrol for the fun of mucking about in the "higher levels," waiting for a Zeppelin to come out?—Ed.] If the opportunity be favourable they may take a chance, and drop one of their few bombs. But these scouts are not intended as bomb-droppers. Their speed is more than twice or three times that of a Zeppelin, and they will have given the alarm in England long before the Germans arrive." [Zeppelin speed equals 65 to 70 m.p.h. in the new types, which multiplied by two or three gives a minimum speed of 130 m.p.h. and 210 m.p.h. for the fastest scout. Some moth!—Ed.]

AUSTRALIA.

The "Melbourne Age" reports that Mr. Geo. Merz, of the firm of Messrs. Valentine and Co., stock and station agents, Ballarat, has received official information from the Defence Department that his son, Dr. G. P. Merz, who holds the rank of lieutenant in the Australian Flying Corps, which is engaged in the Persian Gulf, has been missing since June 3rd. Mr. Merz received a letter from his son about three weeks ago, in which he referred to his experiences with the flying corps, and complained of the great heat in the Persian Gulf region.

Dr. Merz, who is only 23 years of age, is a native of Ballarat, and last year he graduated as bachelor of medicine at Melbourne University.

* * *

It is reported that the Commonwealth has ordered a Maurice Farman seaplane. The first of the six Renault-type engines to be built in Australia is now ready for test. The other five are under construction in Melbourne, and are nearing completion. The erection of B.E. aeroplanes is now taking place at the Commonwealth Flying School at Werribee, where all the parts have been constructed.

* * *

To quote an Australian paper:—"At present nine young officers are undergoing a preliminary course of instruction at the school, while four officers have reached the advanced course. The nine beginners had their first flight on Wednesday. They were taken up singly as passengers in a B.E. machine.

"Major Reynolds, Director of Military Operations, General Staff, visited the Flying School at Werribee recently. The officers in charge are Captain Harrison and Lieutenant Sheldon."

DOPE POISONING.

In pursuance of sub-section 4 of section 73 of the Factory and Workshop Act, 1901, the provisions of the said section apply to all cases of *dope poisoning* occurring in a factory or workshop.

For the purposes of this Order "dope poisoning" means poisoning by tetrachlorethane or any other substance used as or in conjunction with a solvent for acetate of cellulose or its sequelae.

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Efficiency in Production.—(Concluded.)

BY ANGLO-AMERICAN.

TAYLORISED PROPELLER WORK.

From the Taylorist point of view there is quite a close analogy between the building of a wall and such a job as the carving of an aeroplane propeller. The efficiency problem is much the same in both cases. In the one case the worker has to be kept supplied with materials, and in the other case with tools. In any job where the article worked upon is relatively large, necessitating the man's moving about from one end to the other, and where several tools are constantly being used and put down he keeps finding that a tool has been left at the other end of the job, and has to be fetched, or that it has got buried under shavings and has to be dug up, all of which loses time.

On any job where several hand tools are used in succession and frequently changed, they should be arranged in a suitable rack, preferably a circular one revolving on a pivot after the style of a revolving book-case, and on large work such as that cited above the rack should be movable, preferably on a double-jointed bracket like a gas bracket, so that it can be readily arranged within easy reach and moved along by a touch as the work progresses. After a time it becomes a reflex action, and can be done almost unconsciously.

The rack should have one more space than there are tools used on the job, thus leaving one space always vacant. If the first tool used is the one to the right of the gap, after use it would be returned to the space that was originally vacant, and the second tool to use would then be the one to the right of the gap, and after use that one would be returned to the space previously occupied by the first tool, and the third tool to use would be the one to the right of the gap, and so on, round the circle ad lib. Thus, the next tool wanted is close at hand, and the selection also becomes a sub-conscious action.

TOOL ARRANGEMENT.

Tool "economy" is not tolerated under Taylor system. Not only would such prolific time wasters as monkey spanners be tabooed, but all tools have to be exactly suited to their jobs and in right quantities. If a tool is used more than once in the course of a job that requires frequent changing of tools, if it is at all a simple tool, such as a chisel or a file, it must be duplicated. The man must not have to turn the rack back to find the tool used last but one.

For instance, if there are six tools A, B, C, D, E, and F used on eight processes, B and E being used twice each ordinarily, the sequence being A, B, C, D, B, E, F, E, under Taylor management, B and E would be duplicated, and the tools would be set out, in the proper order, A, B, C, D, B, E, F, E, in an annular rack having nine spaces with an empty one between E and A.

The number of tools, their form and sequence, the form of rack and all equipment would be selected by the work planning department, and the lay-out of the work would be done by them. They, in fact, act as general brain-wave merchants, and have to plan out the work and show the workman what they have planned, and train him in taking the most favourable course.

The Taylor system involves a very elaborate work planning system, and that is one feature that frightens careful managers off it at ordinary times. They cannot, or will not, believe that it is possible for an extensive and expensive work planning department to pay its way or to save its cost. That is a bogey whose terror should be considerably diminished at the present time when cost is not the first consideration, and output is the supreme requisite. But an objection that is likely to be raised at the present time is the diverting of men from direct production to indirect production. It will prove just as hard

to convince managers that it will pay—in increased output—to take men off from direct, though inefficient, production and employ them in increasing the efficiency of others.

INDIRECT PRODUCTION.

If a man is taken off direct production and set to making a special tool which takes, say, one day, the concern loses one day's production meanwhile. But if the tool enables a man to do the job in half the time, then, by the end of the second day the time spent on the tool has been recovered. There has been as much work done in the second day as would have been done in the two days under ordinary working, and every day after that there is twice as much work done as would have been done if a day had not been sacrificed to tool-making.

This is a simple principle that Englishmen will not grasp. They are in such a hurry to "make a show," that they will not stop to make proper preparations to ensure future output, and even if a shop manager were enlightened enough to wish to do it he would be prevented by being pushed by some impatient works manager, who would be wanting to bring some directors round to see the progress, and would, therefore, want something showy to reveal to their astonished gaze. So the efficiency of the concern has to be sacrificed to the—what? pride?—of the works manager.

The objection against employing a number, and even a large number, of men on work which is non-productive but ministers to the productiveness of others breaks down in theory when examined, and actually is broken down in practice. Taylor system is not an experiment. It can show results. It has been brought face to face with working conditions on all sorts of jobs in all sorts of places and invariably "makes good" by expediting production.

Moreover, the work-planning department is not entirely an extra department superimposed upon other already existing "non-combatant" departments, but combines with its own the duties of certain other existing departments.

A NEW-OLD DEPARTMENT.

As has already been pointed out, the work-planning department replaces the rate-fixing department. It also takes over the work of the "material chasing" or progress department. In fact, under proper Taylor management there is no material chasing to be done. The people in the work-planning department know exactly where a job is, and long before it arrives, or is due to arrive, at a machine or bench, they have been there themselves in spirit, and have planned out a worthy reception for it and how it is to be handled to get the best results.

They are not infallible, and their first suggestion may not embody the most expeditious method, therefore, there may be a tentative element about the process as first applied, and the work-planning department are always open to fresh ideas or improved methods, and are willing to receive and consider suggestions. As has been said, they are brain-wave merchants, not exclusive manufacturers, and suggestions of improved processes may come from any source.

The workman himself may see a way of doing the job which would improve its efficiency, and is encouraged to put forward his ideas, which is very different treatment from that usually meted out to such troublesome individuals in the average English shop.

THOROUGHLY ENGLISH.

If a mere workman makes a suggestion he is usually told that he is paid to work and not to think, and there the matter ends. Is it surprising if an intelligent workman loses interest in his work and goes about it in a mechanical way? Or the idea may be pirated and exploited as his own by the man higher up.

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An amusing case of this sort which was alleged to be true by a man who claimed to have first-hand knowledge of it was as follows :—

A mechanic employed in the maintenance department of a factory near London devised a very natty tool for one of the operations connected with the work of the factory, an operation which was rather awkward to perform with the ordinary general tool usually used. He made one up in odd moments, and when he got a chance he tried it. The leading hand saw it, and drew the foreman's attention to it, saying, "Look what we've got here," trying to squeeze himself into the affair. The foreman saw it was a good thing, and went and fetched the manager to see it, saying, "Look what I've got here." The manager seeing it was a good thing bore it off in triumph to the managing director, and said, "Look, what I've had made"! Is it surprising if that mechanic was thoroughly disgusted, and vowed that they would get no more of his ideas to scramble for?

[How many readers can vouch for this story? I have had a precisely similar trick played on me personally at least six times by three different "bosses."—C. G. G.]

A MAN'S CHANCE.

Under proper Taylor management the capabilities of every employé are known exactly to the staff manager and his assistants, and there is not the perpetual scramble to distinguish themselves or make capital at others' expense. Things may not be perfect even under Taylor management, but it certainly comes as near ensuring fair treatment as anything is likely to.

If a man makes a suggestion for an improvement in a process on which he is engaged he is rewarded by being allowed to reap the extra wages derived from the increased output, the idea afterwards becoming the pro-

perty of the work-planning department, and if applied to the work of another man the price is revised, or the man may get a part share of the improvement affected according to the nature of the suggestion. Some such arrangement is always entered into so that every employé of a firm may feel that he has a share in its working and its success. Which brings us back to one of the essential features of the Taylor principle, namely, incentive.

INCENTIVE TO IMPROVE.

A man must have an incentive to apply the best methods of production. He must be able to feel that if he makes a special effort, or in any way contributes to the promotion of the firm's interest his efforts will receive due recognition. It may not necessarily be monetary recognition, but there should be some sort of acknowledgment. If, for instance, a man makes a suggestion, though it may be a senseless one, if it is put forth in good faith, it deserves, at any rate, courtesy. Some appreciation should be shown for the spirit that prompts it. And few things are appreciated more than appreciation.

In conclusion, the essential features of the Taylor system may be summed up under three heads: Selection, planning, and incentive.

The first is the judicious selection, allocation, and advancement of suitable people to suitable jobs.

The second is the arrangement and lay-out of the work so as to get the best results not only by doing the job in the minimum number of operations, but also in the least number of movements, cutting out all lost motion and avoidable fatigue.

And the third is the provision of an incentive to the worker to apply the best-known methods and improve them if possible.

THE END.

THE R.N.A.S. COMFORTS FUND.

A reader of this paper suggests that an excellent scheme for raising money for the R.N.A.S. Comforts Fund might be worked with the co-operation of aeroplane builders. He suggests that there are many erectors and other factory-hands who would be pleased to pay, say 5s. for a short flight in the machines which they have assisted to turn out, and that such flights might be arranged for when the machines were being tuned up for their acceptance tests.

Of course, in these days aeroplanes are built so strictly to pattern that practically every machine passes its tests on its maiden flight and is handed straight over to the authorities; but the proposal is, at any rate, worth the consideration of constructors who are anxious to cultivate the interest of their employees in their work and who are not unwilling to assist in providing comforts for the N.C.O.s and men who follow the fortunes of their aircraft on active service.

THE ESCAPED PRISONERS.

The two German prisoners named Bergmann and Heym, who escaped from Dorchester Camp and were recaptured at West Hartlepool Docks on the 20th, pleaded guilty on the 25th to entering a prohibited area without permits. Bergmann was captured at Ypres, and Heym was the observer on a seaplane which was picked up in the North Sea. They had been to London and Deal before going to West Hartlepool, and a police superintendent said they had evidently had every opportunity since their escape of obtaining valuable information for the enemy.

The magistrates imposed the maximum sentence of six months' hard labour, which seems fairly mild, as one would expect escaped prisoners to be shot.

Otto Thelen, the German military aviator who escaped about the same time, was captured at Chatham, with his companion. His sentence had not been made known at the time of writing.

He must not be confounded with Herr Thelen, the engineer of the Albatros firm, who flew at Hendon last year. This gentleman is, one hears, working peacefully at Johannisthal.

PROFESSIONAL JEALOUSY.

Notice is officially given that carrier or homing pigeons are being used for certain purposes in connection with his Majesty's Service, and attention is called to the fact that anyone who shoots or kills a carrier or homing pigeon while on passage renders himself liable to prosecution.

Of course, if he can prove that he mistook it for a Taube all may be well, but if anyone connected with aeroplanes does so it may be put down to professional jealousy.

FOR COTTON CLOTHS.

Aircraft manufacturers who find any difficulty in procuring quick deliveries of fine cotton cloths for airship, balloon, and aeroplane coverings will do well to communicate with William Gschwind & Co., of 211, Deansgate, Manchester. This firm is busy on large contracts for the British, French, and Russian Governments, and they are also supplying many private aeroplane and airship constructors direct.

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A CHANCE FOR HEALTHY MEN.

The Royal Naval Air Service requires a limited number of men of good physique for working parties. Recruits may apply any weekday between 9 o'clock in the morning and noon to the R.N.A.S. Recruiting Officer, at 17, Brook Green Road, Hammersmith, London, W.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

"THE OLDEST INHABITANT."

"What've the Gov'mint done for I? Notherin', I count, less'n it be givin' a sight o' trouble, an' never anythin' come of it all more vallyble than promises and pointin'-out that if this or that won't just so, which it can't be, why that 'ud be different. Any fool knows that much, so I don't thank 'em. But that's the way of Gov'mints. Keepin' all sorts o' fellers goin' 'round wot ain't 'ad no experience of nothin', and ain't no manner o' use, an' we gotter pye. One of 'em come up to mine, goin' on a year ago now, time we started agin' them Germans, an' arst me, 'e ses, right straight's I might be talkin' to you, could I do anythin' of a odd job o' work for Govmint. So I ses, just as straight, for I allers been a rightforward man, same as my father afore me, what don't use two words about nothin', I ses, 'If so be as Govmint's agoin' to pye, an' tells me before-and, an' how much, an' wot that is they wants, an' we can agree a fair price, an' then time the job's started don't come a-interferin', why I don't doubt I can. But I ain't takin' up on no odd jobs without nothin' settled. 'Sides,' I ses, 'I count Govmint order pye me, wot it ain't never done yet, 'long of them prizes I won, wot cost me first an' last, 'bout ten times more'n they was wuth, an' only took on so's I could work for 'em. I reckon I been workin' for Govmint aready, in a manner o' speakin', an' ain't 'ad no satisfaction.'

"'Oh,' ses 'e, 'you bin workin' for Govmint, 'ave you? That 'ud be different,' he ses.

"'Ow different?' ses I. 'Ain't that goin' to pye me for what I done?'

"'Dono 'bout that,' he ses. 'You see, you're a sort of a Govmint servant as it is,' 'e ses, 'sein's you reckon to 'a bin workin' fur 'em. But you better apply to 'em for pyement, an' see what they ses,' 'e ses. 'That's their address up in Lunnon'; and then 'e no more to do but larf short-like an' off to th' station.

"'Ses I, 'Writin's to th' Govmint nor no-buddy else,' I ses, 'same as yer wants 'em to do anything. I count I better go up an' see 'em.' So I goes up to theirs, same as was on the piper the feller give me. Such buildin's for Govmint you never see; 'bout seven times so big as Colchester Town 'All, I reckon, full o' nothin' but a sight of fellers rushin' about something cruel to nowheres partier. So I ses to one of 'em, 'I been workin' for Govmint,' I ses, 'an' I wants 'em to pye me.' 'Oh,' ses 'e, 'been workin' for Govmint, 'ave you? Wot work 'ave you been doin'. Makin' 'orse-shoes or tinned cat's-meat, or wot? Anywye, this is the wrong department you're in,' ses 'e. 'Better try room fifteen upstairs.' So I goes, and that seemed there was 'bout a million rooms in them buildin's, an' when I got there they sends me to room nineteen, an' eighty-seven, an' 'undred an' three, an' all the time I never see anybody pyin' no money in any of them rooms, nor nothin' that looked like that, same's the bank down hereaways. So I see that was no use, an' come away an' never 'ad no satisfaction nor nothin' else. Matter o' four shillin' extra that job cost me, 'thout countin' losin' me day. That's what comes o' tryin' to deal with Govmints; plain waste o' time, I count, done an' said all.

"'Owever, Govmint gotter do somethin' these times agin them Germans, an' you gotter pye. So I reckon that four shillin' I pide helped 'em considerable, an' I don't begrudge it 'em.'

Such is the invariable experience of oldest inhabitants, pioneers, and honest inventor-craftsmen when it comes to dealing with those unsatisfactory creations miscalled governments. That is, until they want you so badly that they have just got to have you. And then—despite any new Inventions Bureaux that are merely the same old

bureaux without any invention or initiative—they find themselves so netted in their own red-tape that they don't know how to get at you.

THE BREEDING OF THE PIONEER.

At any rate, it seems to have been the experience of the oldest inhabitant of the British aeromotor world, the Green: to which, to my knowledge, was the first of its type, beginning very modestly years ago, in that nest of motor novelties, a Cordingley Show, as a cycle-motor, with a curious frizette of honeycomb radiator on either side of its water-jacket, and accordingly—I really beg your pardon—attracting much immediate notice from the curious in motor-lore, and still more from others with an insight into its possibilities: but no very great number of orders.

Alongside this ingenious motor—which only failed, I am sure, to obtain the suffrage of the motor-cycling unpopularity because it looked too overtopped—were shown the cast-iron and copper hollow-ware which combined to make up the unit of the future Green motor. This, on the other hand, was such a clearly commercial outfit that it likewise failed—lacking the excuse to be expensive which the British motor-trader considered essential to his survival. For those were the days when copper water-jacketing—not exactly novel—presented great problems. The Panhard, Tony Huber, and Delahaye, its chief exponents, were wont to weep—nay, sobbed bitterly—under any prolonged stress. The German jacket, laced on at top and bottom with steel bands shrunk on hot over flanges, though fearless, was supposed to represent a patent no one had the courage to defy. And there you were: for M. Unné, or whoever it was, had not then invented his copper-wire-purfling method.

NEW LAMPS AND OLD LIGHTS.

For the attraction of the Green's jacketing was that it buttoned on, like yours or mine; the buttons being open nuts over the valves and water entries, the concave lower edges of which bit hard down on the copper over certain protuberances in the cylinder casting. Which method obtains in the Green design unto this day. That is why I am sorry that no one ever took Mr. Green to see the Pipe motor of the period, and possibilities therewith, in the way of big valve areas; all to have been obtained simply enough, merely by setting the valves transversely of the motor instead of in line parallel to its axis, and diagonally at the same time. Perhaps nobody else sufficiently appreciated poor Pfenders' genius and knowledge of the most efficient shaping of combustion areas and big valves. Likewise, we had then had no Four-Inch Race—and Tom Thorneycroft was not yet at his zenith of speed-theft—to teach us the value of the latter factor in motor design. But probably those who dimly guessed and groped after these lights—you that luxuriate in monobloc, valve-encased simplicity and silence cannot imagine our ignorance of those days—saw one thing, that this all-in-line position of the Green valves, and the flat cylinder heading tied you to valve-areas that, never too great, could only increase with the diameter of the cylinders; which, of course, could represent no proportionate gain at all.

And so—they admired, complimented the inventor, ascertained that his patents could not be filched—and passed along.

THE PIONEER'S CHANCE.

Years passed along too. No doubt a few Green motors were built, just to show what could be done. I do not know what happened in that misty interregnum. And then came in a hurry all the wonder-story of the birth of flying. Came with it the rotary obsession, a good idea, as we have seen, but not the only silicious fragment on an otherwise sandy shore. Likewise, the not too promising examples of the Antoinette and the E.N.V. And

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

also, to most of the men who really mattered, who out of mud and rags and sticks, borrowed money and poverty, were building up and generally overgetting the British aviation industry and their country's victory in this war—against all the growing influence of Gov't-subsidised incompetence—came the direful consciousness of the cost of those motors.

Then, no doubt, somebody rediscovered the Green motor as something to be had more or less "on the never," borrowed, conveyed, or otherwise obtained fairly cheap; and with any faults it might have—all-British, anyhow. So over beyond the desert of Eikanir—I mean Brooklands—in that abode of the living-dead (broke) the Green made its début as an aeromotor and found its life-work.

AND THE MAKERS THEREOF.

And presently, one F. M.—who twenty years ago, I am positive, would have owned the fastest trotting-pony and the most frightful bull-dog in all London if they had been British bred—having tired of buzz-boating and commodoring, came along and had a good look at flying and its general outfit. Then he made up his mind that there were other *roles* more useful, if less sensational, than that of a cock-angel sitting on an imitation cloud fitted with a pair of skids, and thus grasped the largest and most obvious fact of the day—which no one else noticed at all—that the development of an all-British aeromotor that would really motor was the biggest and most useful work that he or anybody could tackle. Perceiving this, he no doubt felt it was therefore up to him—as no one else looked the least likely—to try. It meant a lot of money, and more work of the hardest kind to touch the affair at all and not lose the lot. To be a target for blame with never any bouquets. But he just went ahead and got on with it. So there is the Green to-day—with the greatest endurance bench-test in the world among its honours—thanks to the inventor's and his own tireless endurance. Whether they have made money I don't know; all that matters is that they have made the Green aeromotor. And as the oldest inhabitant would say, "No thanks to no Gov'mint."

SINGLE-MOUNTING ADVANTAGES.

The original model—which may still be made, in spite of the demand for high power that the Green so ably fulfils, and will be presently called upon to exceed further—had four-cylinders, singly mounted. Every later model has retained the same feature. Now as I have always maintained, there are possibilities of mono-jacketing, to combine the same results just as efficiently, but with simpler and cheaper shop-production, beyond anything so far developed. But there it is; they are beyond, and not ready to hand. And if they were, they would involve the most radical redesign, whereafter they would not represent the Green or any other trusted example. So as the chief of those results are an absolute control over cylinder-thicknesses and dimensions generally: the ability to refine these for weight-reduction and so forth, to the last millimetre; the assurance of casting-soundness to the point of absolute trustworthiness before the motor goes together, much less into an aeroplane: and finally, the minimum of foundry wastage—well, the single-mounting system is the best immediately available. But it does not—and most certainly should not—require the attaching foot-flanges to be at the cylinder bases. For apart from introducing difficulties of alignment that need not exist, this fashion of design is one of the most insidiously mischievous that can be embodied, especially in any new experimental production, because it obscures,—and therefore intensifies,—any running faults to which most early examples are liable; so doubles the difficulty of detection and cure. Of course, you may eventually get the better of this defect so far as to get practically rid of it; as in the case of the Green. But you might have done without it to begin with.

BELT-FLANGE V. FOOT-PLATE.

Now why exactly? Because all the functional work, the combusto-explosion and jar begins in and continues from, the other end of the cylinder; just as the wind hits a tree-top, not the trunk. Isn't it clear, then, that you should tie up things as near that end as you can reach, so as to brace them closer to the work of resisting hindrance-elements? Especially if they stand alone, with nothing on either side to lean on or tie to. That is why the flange of any single-mounted cylinder should belt it as high up as it can be placed, to the very bottom of the water-jacket if possible, and not be a foot-plate at all. Sink that lowest three or four inches of trunk into the crank-chamber, heightened to contain it. After all, it is only a piston-guide. You may thus—as an extra refinement—easily so design that crank-chamber top-storey that it can grip flange and all, and so cut out all those attachment bolts and nuts, and their weight, which is always a notable consideration, in any aeromotor. Again—which is fully as important as getting rid of vibration, and materially helps to do that—by heightening the crank-chamber in this way, you can place its horn-plates or other frame-attachments higher, and so get the motor-mass slung in better balance in the frame: mass balance being the chief object in any vertical or V-type. Beside, the extra height—which need not increase the total weight sensibly—gives all the more internal space, and introduces possibilities of convenient accessory make-up; quite apart from enabling the interior to be made far more accessible: which is a consideration as important for an aeromotor as for a marine one. As any woman will tell you, a few inches make all the difference, in a wardrobe.

That is why I consider that we have not yet seen the Green or any other single-mounted motor, except perhaps the A.B.C., at the best of its possibilities.

(To be continued.)

ORNAMENTAL AND USEFUL.

The catalogue of Sunbeam-Coatalen aircraft motors which has just been issued by the Sunbeam Motor Car Co., Ltd., of Wolverhampton, is a true work of art.

The catalogue treats of the 12-cylinder 225-h.p. engine and the 8-cylinder 150-h.p. engine, and much information has been compressed into the comparatively small compass of 65 pages. Following general descriptions of the two motors are specifications and photographs and also diagrams showing side and end elevations, with outside dimensions as a guide to the type of engine-bearers, etc., required. A carefully drawn oiling diagram is given and also diagrams of valve setting and ignition timing.

A section is devoted to hints regarding the proper running of the motors, and instructions for the correct method of starting up are clearly set forth.

The rear portion of the catalogue is devoted to an elaborate number of sectional drawings of the engines, setting forth the various parts, each of which is numbered to facilitate the ordering of spares, so that any part of an engine or its attachments may be requisitioned by telegram if necessary.

The pages are relieved by a number of vignettes of seaplanes, and it is pleasing to note that machines with engines other than Sunbeam-Coatalens have been illustrated in a charmingly cordial spirit. A number of sheets of ruled paper have been bound into the book for engineer's notes, etc., and the whole production reflects great credit on its designer.

The Sunbeam Motor Car Co., Ltd., will, of course, be pleased to supply any responsible person or firm with a copy of the new catalogue.

AN ELUCIDATION.

Messrs. C. A. Vandervell and Co., the well-known electrical engineers to the Motor and Allied Industries, and manufacturers of the "C. A. V." specialities, wish to contradict the rumour, which appears to have got into general

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circulation, to the effect that H.M. Government have taken over the entire output of their works, both at Acton and Birmingham, in connection with munitions work.

While Messrs Vandervell are working under the direct control of the Ministry of Munitions, and are executing very large contracts for the Government, they are still in a position to fulfil orders, without any undue delay, for their various standard productions, having just completed and equipped still further extensions to their factory at Acton, the total area of the firm's factories now covering over 7 acres.

THE HISTORY OF A GREAT INDUSTRY.

The industrial history of Wm. Heaton and Sons, Ltd., of Lostock Junction Mills, the largest private firm of fine cotton-spinners in the kingdom, had its foundation in the days when the science of textile mechanics and engineering skill were transforming cotton spinning and manufacturing from slow and primitive processes, mostly conducted in the homes spread over the Lancashire countryside, into great productive organisations in mills.

In the year 1800 the late Lambert Heaton, grandfather of the present head of the concern, built a mill at Doffcocker, near Bolton. This was one of the first mills erected for spinning by power. When this mill was originally erected steam-power had only just come into use, and the steam at that time was never more than 7 lb. pressure. When it was discovered later that the higher the pressure the greater the economy, it was put up to 14 lb., with the result that when a little steam escaped the men all ran out of the boiler-house.

When Mr. Lambert Heaton got his power mill going 60's twist was selling for 10s. per pound. Both spinning and weaving were very profitable occupations. It was commonly said that at that time a weaver would go into a tobaccoist's shop and throw down a shilling for an ounce of 'bacca and was too independent to wait for the change. A Bolton manufacturer, writing in 1800, the year of the foundation of Doffcocker Mill, gives an amusing picture of the times about Bolton. He says: "The trade of muslin weaving was that of a gentleman. The weavers brought home their work in top-boots and ruffled shirts; they had a cane, and took a coach in some cases, and appeared as well as military officers of the first degree. They used to walk about the streets with a five-pound note spread out under their hatbands; they would smoke none but long churchwarden pipes, and objected to the intrusion of any other handicraftsman into the particular rooms in the public-house which they frequented. Weaving carried on under the conditions of the times by families made them small manufacturers and a proud lot of people."

[Rather like the munitions worker of to-day. But times always change.—Ed.]

The introduction of steam made it possible even then for one person to take care of 200 spindles, which previously had required 200 persons to mind them. To-day one person minds 500 spindles, and they are running at ten times the speed of the mule spindles of 1800.

[Workpeople objected to being "speeded-up" then, just as they do now, and there were many riots and much smashed machinery in many parts of England.—Ed.]

The Heaton family before the introduction of steam—long before 1800—were spinners and weavers of the finest goods, so that they have been associated with the cotton trade from the earliest chapters in this country, from the days when "the women who were wise-hearted" did spin with their hands, and the weaver fashioned the cloth on the old hand-loom.

The long-stapled Sea Islands cotton, grown on the cotton belt of South America in a hot, humid atmosphere, and on soil rich in saline qualities, is spun into counts of varying degrees of fineness. At the great exhibition of 1851 Messrs. Heaton exhibited in the textile department yarn of 800 counts. One hank is 840 yards long, and a 800 hank represents one pound weight of cotton.

Doffcocker Mill, being on the old road, was a long way off the Lancashire and Yorkshire Railway which ran through the valley. The firm decided to follow the railway soon after it opened. They secured land at Lostock Junction, and built a mill which contained 60,000 spindles. The repute of the firm for high quality yarn became great, not only in this country but in those portions of Continental nations which use the fine counts for thread.

As the years proceeded inventions of economical value on the mechanical and engineering sides of cotton mills were adopted by the firm. Within the life of Mr. Wm. Heaton, the present head of the firm, who came to business at Lostock on October 9th, 50 years ago this October, there have been momentous changes in the conditions of yarn production, and the lot of the operative has been vastly improved. When Mr. Wm. Heaton first went to the mill, then under his two uncles' ownership, frame tenters were getting 8s. a week. To-day they are getting over £1 a week. Spinners, creelers, and all other operatives have shared in the steady evolution of improved conditions of work and payment for results.

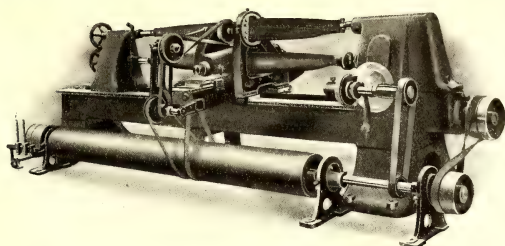
It was when the American War was finishing that the present head of the firm first came to learn the business at No. 1 Mill. He saw cotton sold at 10s. per lb., witnessed the awful poverty of the time, and remembers how prayer meetings were held in which the Almighty was invoked to send cotton, and how at one of these, when



A Group of a few Beatty School pupils, with Instructor Gino Virgilio in the centre.

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the pleading invocation went up, "Lord do send us cotton," an old spinner shouted out, "Amen, Lord! But not Surat—not Surat!"

The firm now operate 263,000 spindles, all engaged in spinning superfine combed Sea Island cotton yarns, and the modern tendency of the management is witnessed by the fact that a goodly portion of it is destined for manufacturing into "aero" fabric and for the best qualities of cotton sewing thread such as is used in stitching aero-plane fabric.

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Now that so many individuals and groups of people are launching out into the sea of aircraft business, any sound information which will assist them in the design and construction of a seaworthy bark in which to brave the financially troublous waters of the trade, and instruct them how to avoid the liberally strewn rocks and shoals which abound, must be of infinite value.

A book published by Bedford and Martin, Ltd., which has reached its third edition, fulfils a very pressing want. This work, which bears the title, "Limited Liability Companies," demonstrates the advantages which a limited company enjoys over a private concern, and propounds the correct method and form in which to set about its formation.

To the non-business mind it seems little short of miraculous how a business man who is threatened with ruin through the pressure of debts can save himself by handling his finances in a properly businesslike manner, always providing, of course, that his business instincts are sound at the bottom.

The price of the book is 2s. 6d., and it should pay some hundreds of thousands per cent. on its outlay to any business man who wishes to extend his firm's activities.

TO BEGINNERS.

Mr. Oliver W. Thomas, of the Thomas Bros. Aeroplane Company, has written a brochure of interest to those who think of learning to fly. The booklet opens with an introduction which almost convinces the reader that flying as a sport is safer than motoring, motor-cycling, and "speed boating."

An elementary but very clear description is given of the working of an aeroplane, the theoretical laws which govern flight, and the nature and properties of air as a medium for locomotion. The remarks made on the care of machines and the precautions to be taken during cross-country flights are of particular interest, because it is well that the would-be pilot should have, at any rate, some notion of what he is in for before he takes the plunge.

Mr. Thomas concludes with some words of wisdom on accidents and their prevention, which even seasoned pilots would do well to peruse, as he gives some really useful tips for dealing with emergencies.

The school managers at Ithaca, N.Y., will doubtless be glad to send copies of the booklet to any people in this country to whom it is likely to be useful, or copies may be had from Mr. Oliver Thomas, "The Croft," Denbridge Road, Bickley, Kent.

PILOTS' PORTRAITS.

It is to be noted that all the photographs of new pilots, which appeared in THE AEROPLANE last week, were taken by Mr. F. N. Birkett, 97, Percy Road, Shepherd's Bush, W., and they are now included in the F.N.B. Series of Pilot Portraits. Mr. Birkett, who has by far the finest collection of aviation photographs in existence, has recently fitted up a new studio with specially painted backgrounds for aviators' portrait work, and keeps a suit of aviator's clothing on the premises. This is to save bona-fide aviators the trouble of bringing their flying clothes to the studio, and is not intended for bright youths who merely wish to be photographed as aviators in order to impress their friends.

A NEUTRAL AT HENDON.

THE AEROPLANE'S Danish correspondent being always keen for a job and drawing such high salaries from writings in the paper for practical men, I jumped at it when the Editor offered me to come and do this week's report to relieve those initials D.W.T., who have gone—perhaps on holidays? For which that Jack-of-all-trade should have substantial reasons, after having acted as Arabian correspondent and having worked as pocket thief against the ever-young chronicist Robinson Crusoe. And re his friend Mr. Samuel Pepys, what does not the proverb say: "Tell me those you converse with and I shall say you, who you are"? Which in this case is not difficult to give as well. "*Nomen sunt omnia*," and "*de mortuis nil nisi bonum*," chiefly for the reason that he may one day re-appear.

As a matter of fact, these notes were written on board the steamer, in boredom, while crossing the North Sea, the Germans arranging no entertainments beyond burning a schooner with a wood cargo, and being in malicious spirits, I will tell you that I know for certain this is the way "D. W. T." does it when he describes most realistic how vigorous the Beatty airmen stuck to banking, and on. So I shall say, just for a variation, that no Beatty-Wrights took the air on Saturday, their pilots sticking to the real use of the week-end, Mr. Beatty himself being alone out for fresh air on one of his Caudron biplanes.

Busy to a high degree were the Grahame-White people, Messrs. Manton, Winter and Osipenko by names, giving a high number of fellow-citizens their *baptême de l'air*, the two formers performing on box-kites, the latter on the 100 h.p. Green char-à-banc, taking passengers two at a time. The smiling school manager, Mr. Murray Ross, being busy writing in a book every time one of his pilots landed, I suppose he was conferring marks on them, good ones to them all, if I be the judge. Mr. Manton put, too, in a spectacular show on the 100-h.p. Grahame-White scout, his socks fashion of the day being one red and one yellow, indeed a most ingenious solving of the port and starboard lantern problem for aerial navigation.

By the way, let me give the explanation of the Danish increased import of cotton, *vide* the daily Press. Mr. Manton having set the new fashion, a smart Copenhagen manufacturer got the sense of the business proposition, when he was in London and paid a visit to the Hendon aerodrome, according to the posters the recognised rendezvous of Londoners, afterwards starting a most prosperous and ever-increasing business in that branch in the Danish capital.

Mr. Moore opened the day's work on his Caudron and kept himself busy during the afternoon both by single and passenger flying, while Mr. Irwing represented the L. and P. School, and the Baumann Bros. evolutionised on Ruffy-Baumann Caudrons, 60-h.p. and 50-h.p. Gnome.

Several tractor-biplanes took the air, some leaving for other aerodromes, and a section of the Anti-Aircraft Brigade cars drove up on the flying ground, for the general education of the spectators, luckily not turning their hostile intentions into reality by firing the guns, following the various aviators pointed.

Ideal conditions prevailed on Sunday, which saw thus a great deal of work, witnessed by a considerable attendance of lookers-on. Before the official flying commenced Sergeant Lilywhite flew in a remarkable almost vertical start on a Martinsyde scout, and other welcomed visitors were Mr. Hawker and Lieut. Busted on Sopwith biplanes, whose roundings of the pylons were reminiscences of former Hendon race days.

Almost the same pilots as the foregoing day took to the air, Messrs. Manton and Winter continuing passenger flights on a big line on box-kites, Mr. Moore being again out on his Caudron biplane and Mr. Beatty giving way to Mr. Roche-Kelly on a Beatty-Wright, while there was in reality only a change of pilots, when Mr. Irwing was re-

placed by Mr. Hall on his Caudron No. 4. Further, both bearers of the Baumann name were out again, and the various schools took beside the chance of getting some pupil practise done.—Hr.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon	Fine	Fine	Fine	Fine	Fine	Fine	Fine
South Coast ...	Fine	Fine	Fine	Show'y	Heavy Rain	Misty to Fine	Fine
East Coast ...	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Lake District ...	Wind	Wind	Fine	Wet	Perfect	Wet	Wet

HENDON.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Rocher-Kelly, C. B. Prodder, R. W. Kenworthy, A. E. Mitchell and G. Virgilio.

Pupils with instructors on Beatty-Wright machines: Messrs. Arbon (20), Baldwin (10), Byrne (10), FitzHerbert (5), King (15) and Tolhurst (5).

On Caudron machines: Messrs. Begg (30), Bowick (20), Brown (10), Collett (10), Collier (35), Cowper (10), Cumming (25), Fawcett (30), Gayner (10), Hodgson (50), Hoskins (10), L. F. Jones (20), Lashmar (30), Mellings (10), Moxon (55), Nash (10), Nicholson (25), Overton (20), Owen (40), Rimington (20), Stagg (20), Symington (10), Patterson (60), Murdoch (30), Duffus (40), Brynildsen (30) and Podmore (10).

Certificates were taken during the week by Messrs. L. L. King and M. V. Morgan on Beatty-Wright machines and by Mr. P. B. Moxon on a Caudron machine, each of these pupils making excellent flights throughout.

MISCELLANEOUS ADVERTISEMENTS

All advertisements for this column should arrive at this office by 6 p.m. MONDAY to ensure insertion.

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Machines in use: Baatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday and Sunday.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irving and C. M. Jacques.

Pupils rolling alone: Messrs. Little, Law, Northrop, Lander, Dawson, Medaets, Roberts and Jowett.

Straights: Messrs. Ellis, Lewis, Lochett, Knowles and Dalrymple.

Half circuits alone: Messrs. Franklin, Woolley, Jamieson, Rochford and Blackburne-Maze.

Four excellent "brevets" were taken during week by Messrs. Grimwade, Woodley, Sargood and Jamieson.

Machines: Three L. and P. biplanes.

AT THE HALL SCHOOL.

Instructors for the week: Messrs. H. F. Stevens, C. M. Hill and Chas. Bell.

Pupils doing straights or rolling alone: Messrs. Seward, Nicolle, Lieut. Bell, Messrs. Arnsby, Wooley, Dodds, Dresser, Evans, Manley, Shum, Bond, Sepulchre, Camberbirch, Butterworth, Ackroyd and Stirling.

Pupils doing circuits and half circuits: Messrs. Mason, Brandon, B. Watson, Wilkins, Bangs, Hooker, F. Hall, Hamer, Cook, Bayley, Purnett, A. Watson, Broad, Butterworth.

Figures of eight or circuits: Mr. A. Watson.

Machines in use: Hall tractor (Government type) biplanes.

Owing to an oversight the week's work for September 19th was sent too late for publication.

Certificates were taken during that week by Messrs. Russell, A. E. Hatchman and V. M. Wenner, all taking their certificates with precision.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with instructor: Messrs. Griffith, Prothero, Stewart, May, Sherwood, Bolton, Harkness, Cole, Cuthbertson, de Graouu, Rees, Johnston, Thomson and Barnard.

Doing straights or rolling alone: Messrs. Liddell, Chambers, Bailey, Gallop, Capt. Fairbairn-Crawford, Messrs. Ball and McBeano.

Machines in use: Ruffy-Baumann and Caudron type biplanes (50 and 60 h.p.).

Another good week has been put in constructionally by many of the pupils, particularly Mr. W. Griffith. Many passengers taken over week-end.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton and Winter.

Pupils with instructor: Prob. Flight Sub-Lieuts. Aplin, Biscoe, Corry, Cross, Davenport, Gammon, Graham, Hadow, Hackman, James, Man, Sadler and Till.

Straights alone: Prob. Flight Sub-Lieuts. Biscoe, Cross, Corry and Man.

Eights or circuits with instructor: Prob. Flt. Sub-Lieuts. Biscoe, Cross, Gammon, Hackman, Hadow, and Till.

Circuits alone: Prob. Flight Sub-Lieut. Hadow.

Machines in use: Grahame-White biplanes.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructor for the week: Mr. H. G. Russell.

Pupils with instructor on machine: Messrs. de Meulemeister, Ellis, Hughes, Jones, and Lieut.-Commander Spencer.

Machines in use: Grahame-White biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. Rowland Ding, J. Laakoster Parker, and W. Laidler.

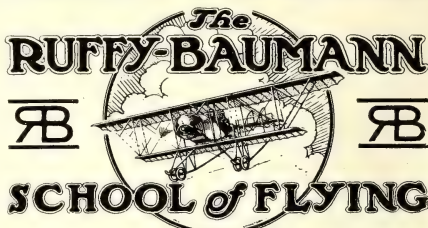
Pupils with instructor on machine: Messrs. Barber (13), Benson (12), Inglis (22), Ingham (10), Macintyre (12), Macaskie (13), Johnson (11), Part (16), Robinson (12), Robertson (16), and Shaw (20).

Pupils with instructor as passenger: Lawton (17), Macaskie (25), Reid (17) and Slingsby (23).

Certificates taken during week: D. S. C. Macaskie finished ticket with a very pretty glide.

Machines in use: N.A.C. 80 Gnome propeller biplane.

It has been found that a 50 Gnome was not giving a sufficient margin of lift when floats became saturated, so it was decided to fit on 80 into pusher biplane. The tail has been redesigned and cable instead of wire fitted throughout. She goes up like a "scout" now. A new biplane is well under weigh in the works. Several passengers carried.



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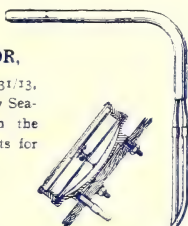
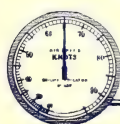
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THE AEROPLANE

WEDNESDAY, OCTOBER 6, 1915

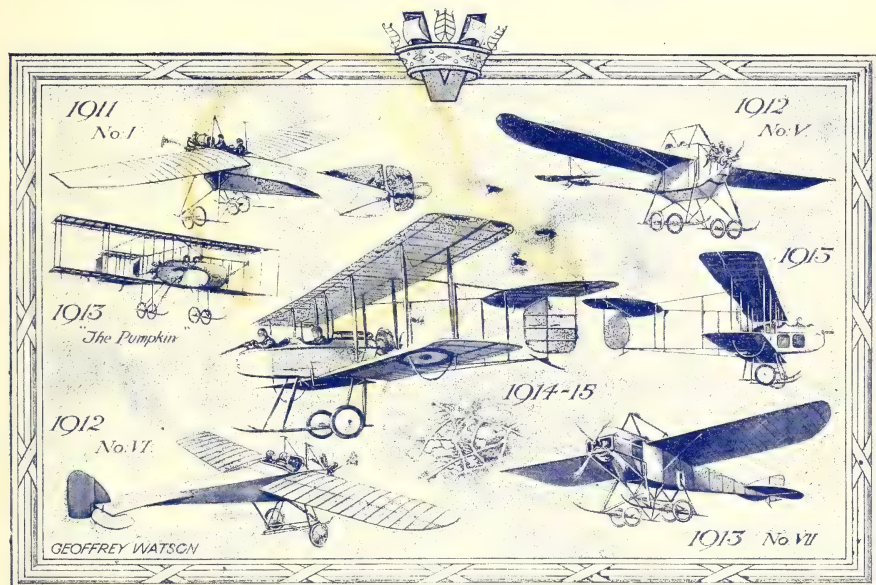
Edited by C. C. Grey

Vol. IX. No. 14

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

MILESTONES—VII



THE DEVELOPMENT OF THE VICKERS MACHINES: First the Vickers-R.E.P., of 1911, which developed into the full-bodied No. V, with R.E.P. engine, and thence to the Military Trials "sociable" with Viale engine, and so to the big No. VII with a 100 h.p. Gnome.

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ON THE RECENT PUSH.

It is as well to remember in moments of elation the old proverb, "Never holloa till you're out of wood." Self-complacency before a job is finished means at best scamped finishing and at worst never finishing at all. It is therefore gratifying to see that the people of this country have shown no disposition to "Maffick," in spite of the huge headlines and glowing descriptions with which the daily press has hailed the success attending the French and British "push" on the West Front. Be it said that the official communiqués have been worded with scrupulous moderation, so much so that there is reason in the point of view of a well-known manufacturer of aircraft who, after seeing the flaming headlines and then studying the communiqués, remarked: "They read rather like a German account of an off-day against the Russians."

What has really happened we cannot know till the lists of casualties between N.C.O.s. and men are published a month or two hence. Then we shall be able to size up whether regiments lost men in attack or defence. As a rule an attacking force does not lose prisoners, nor are men reported "missing, believed killed." It is a German axiom of war that an attacking force must lose more heavily in killed and wounded than a defending force, but it stands to reason that men missing mean ground lost. In this connection it is of great interest to read the British and German reports published on Monday morning.

Sir John French's despatch says: "Our captures have amounted to over 3,000 prisoners and some 25 guns, besides many machine guns." The German communiqué says: "The number of prisoners taken in the fighting in this British sector increased to 106 officers, 3,642 men, and the booty to 26 machine-guns."

Now remember, the German official communiqués—as opposed to their wireless yarns—do not lie, except when a credible lie is of supreme importance, and this paragraph appears to be merely a matter of routine figures, not a diplomatic or political effort of any kind. It may be that these 3,700 and odd prisoners were native troops, or a brigade of third or fourth-line French troops pushed into the "British sector" to fill a gap temporarily—if so, the War Office would do well to explain, for, if not, the assumption is that the German counter-attack was more successful as regards putting enemies out of action than was our own attack.

It is significant, however, that our men captured 25 guns, plus machine-guns, whereas the Germans only claim 26 machine-guns, which indicates that the German counter-attack never broke through to our artillery positions, and that our troops captured and held a big slice of enemy territory and the guns emplaced therein. Official information shows that the British attack was on a bigger scale than at Neuve Chapelle and therefore it achieved somewhat greater results. It is probable that the errors which prevented the gains at Neuve Chapelle from being pushed farther forward have been eliminated from this action, and one has every hope that new appointments on the Staff have not resulted merely in new mistakes being made.

Confident as one is that Germany will ultimately be thoroughly defeated, it is most important that we in this country should not become self-satisfied, for that means slackening our efforts, and now more than ever is the time for increasing personal endeavours and national efficiency.

THE WORK OF THE R.F.C.

In such success as British troops have gained it is evident that the Royal Flying Corps has played a worthy part. From the list of combats in the air during September one may judge how strenuously the R.F.C. has fought to clear the air of German air scouts and thus to conceal the movements of British forces, and especially of British artillery moving into position for the attack.

On the 20th it was recorded that 40 combats had been fought between September 1st and September 18th; on the 26th, 27 further fights were recorded up to the 25th; and on October 1st, Sir John French's official report mentioned 17 more fights during the previous seven days, making in all about 80 fights during the month—if one allowed a slight margin for these reports overlapping by a day or so. In all these there was only one instance of a British aeroplane being worsted.

Considering what the R.F.C. had in the way of machines and pilots at the outbreak of war this result is astonishing, and doubtless we shall see in due course the usual panegyrics in the press about our mastery in the air and the superiority of British aircraft and pilots. It is therefore most important in reference to this aim, as in the case of the infantry, to avoid being too pleased with ourselves.

Before shouting about the superiority of British aeroplanes over all others, it would be well to find out how many of those combats were fought and won on French-built machines, some of them of design and construction which would not be accepted from any British manufacturer. Also, it would be well to know more of the personal efforts, physical discomforts, and dangers other than those of enemy fire, incurred by our pilots as compared with those exacted from the German pilots opposed to them.

Over and over again our pilots have defeated Germans on superior machines by the simple process of starting out early and climbing in a long while to great heights, where they have patrolled for hours waiting for the Germans to come along and be attacked. All this extra strain and waste of energy could have been avoided if we had had better machines and engines at the beginning of the war, and it can be avoided in the future if the Authorities will go to work the right way and encourage the production of better machines by independent constructors instead of ordering vast numbers of inferior performers simply because they are of official design.

It would be interesting to know how many times an R.F.C. pilot has attacked German machines and has overtaken them solely because the British machine has been high up to start with and has had gravity to help

its feeble engine in picking up the required speed. And it would be equally interesting to know how many times German machines have got away by the simple process of opening their throttles and leaving the British machine behind. True, the little Bristol and Martinsyde scouts are faster than the big German fighting machines, but they are not gun-carriers in the ordinary way; the Avro two-seaters and Vickers gun-carriers do marvels with the power available, and the B.E.2cs. with the newer and larger engines are well enough in their way, but the bigger German machines have them stiff for speed at any time. If the Germans can build such machines, we—"the greatest engineering country in the world" (*vide* many papers and politicians)—can do at least as well, if the Government will give designers a free hand and some encouragement.

THE MEN, NOT THE MACHINES.

The superiority of the R.F.C. in these combats is almost entirely a matter of men and not of machines. On these notable results the R.F.C. may well be proud,

with that humble pride which is characteristic of the Corps which loathes advertisement and deliberately decries the most gallant work of its officers and men in its effort to live down the foolish boasting of the politician who claims to have founded it and who nearly succeeded in wrecking it.

From General Trenchard, to whom the Corps owes so much for his institution of rigid discipline over its unruly component parts in its early days, and who has commanded it in the field with such success during the recent operations, down to the youngest air-mechanic who helped by good work to tune up any one of those victorious fighting machines, or scouts, or artillery spotters, the Flying Corps on active service has earned the gratitude of the Army, and of such proportion of the people of this country as may realise that the nation is really at war.—C. G. G.

[It may be of interest to note, as a coincidence, that the foregoing appreciation was written on Monday last, before Sir John French's welcome Army Order reached this country.—C. G. G.]

ON A SELF-CONSTITUTED INSTITUTION.

The following notice, which appeared in the "Times" of October 1st, will be read with interest by all, and possibly with amusement by some, concerned with the Flying Services and the aircraft industry:—

At a meeting held at the Royal Society of Arts yesterday, over which Sir William M. Ramsay presided, it was decided to inaugurate "The Aeronautical Institute of Great Britain," which will have three principal functions—aircraft production, aeronautical progress, aeronautical propaganda.

The first work of the Institute will be to develop its first function of aeronautical production by the establishment of an Aeronautical Production Committee. The proposed method of working such a Committee was explained by Colonel F. N. Maude and Mr. L. Blin Desbleds. It will aim at immediately increasing the country's rate of aircraft production mainly in the following manner, which, it was declared, would interfere with no existing arrangements, Governmental or other:—

(i) To organise a Central Bureau which would render possible the (voluntary) co-operation and co-ordination of the aeronautical industry, thereby enabling the execution of larger orders than is at present the case.

(ii) To give the financial institutions of the country special technical assistance not otherwise obtainable, thus linking up finance with the aeronautical industry and thereby further increasing production.

(iii) To make arrangements for the best utilisation possible of the existing labour, and for the training of as many men for aeronautical work as the situation demands.

The whole function of the Institute will be during the war to speed up production by organisation in every direction.

The meeting was well attended, and among those who had accepted the invitation to be present were:

Sir Frederick Pollock, the Hon. W. P. Schreiner (High Commissioner for the Union of South Africa), Professor W. C. Unwin, Sir Philip Magnus, M.P., Sir Charles Macara, Sir George Taubman Goldie, Mr. W. Nelson Mitchell (chairman of the Imperial Tobacco Company), Sir Leo Chiozza Money, M.P., Mr. Charles Bright, Sir Alfred Pearce Gould, F.R.C.S., Sir R. W. Burnet, M.D.,

Lord Hill, Lord Claud Hamilton, M.P., Mr. Basil Peto, M.P., Mr. A. S. E. Ackerman, Mr. Robert Mitchell (Director of Education, the London Polytechnic), Sir Alexander Pedler, and Mr. Evelyn Wrench (hon. secretary and organiser of the Overseas Club).

The idea of co-ordination and co-operation in the aircraft industry is an old one. It was suggested in this paper some months ago, and when the Aero-Committee of the Society of Motor Manufacturers and Traders was formed some years ago the germ of the idea existed.

Apparently, the aircraft industry does not desire co-operation in any form, any more than does any other English industry. Free competition between firm and firm, on a more or less friendly basis, seems to be inherent in the English mind. Even agricultural co-operation does not flourish in England, and makes greater proportional headway in Ireland—in the latter country this may be accounted for by the fact that co-operation partakes of the nature of conspiracy, and so fits the Celtic temperament.

One may coerce an Englishman, or discipline him, or cajole him into following a leader, but one cannot persuade him to co-operate voluntarily with his fellows, possibly because of that intense individualism which makes it an article of faith with every Englishman that he is "as good as the next man, and a damned sight better"—as a workman once put it to me. That is why Saxon England was a Heptarchy—which was much the same as an Anarchy—in the period between Roman coercion and Norman discipline. Therefore, one may wash out any idea of co-operation in this or any other industry, unless co-operation is forced on industrial England by the Government.

A PRACTICAL EXAMPLE.

It is in the power of the Government to increase the output of aircraft enormously by forced co-operation. For instance, at the present moment certain standard type aeroplanes are being made. Some firms working on these machines are making all their metal parts themselves. Some firms are buying their metal parts from other firms which have a surplus, and some firms are buying from engineering firms, or cycle firms, or motor firms who have taken to making these metal parts. In the first case the fittings must cost far more than is necessary, in the second case there is unneces-

sary waste of time in bargaining, transporting, and general shopkeeping, and in the third there is the same wastage. The net result is that time is wasted and a whole heap of metal parts are being made which will never be used. At the present moment I should estimate that there are enough of certain fittings for B.E.2cs. lying about the country to supply about twice as many such machines as are ever likely to be built.

If Authority stepped in and said, "All this waste must be stopped. Certain metal-working firms of repute will make all these fittings, in the correct proportion to the number of these machines on order, and no one else shall make any at all"—that would be enforced co-operation of the right kind. I commend the process—or some process on similar lines—to the Aeronautical Inspection Department, R.F.C., and to that department at the Admiralty which deals with aircraft supplies.

Co-operation on any other lines is an impossibility in this country. So much for the general basic scheme of this self-instituted "institute."

"BY WHAT AUTHORITY DOEST THOU THESE THINGS?"

Having disposed of the fundamental idea of this "institute," we may proceed to investigate the claims of the so-called institute to be considered in the scheme of things.

The whole thing seems to rest on a somewhat flimsy foundation. It is not established by the desire or with the participation of the people most concerned—namely, the aircraft manufacturers themselves—nor does it appear to have any support from the only possible present purchasers of aircraft, the Admiralty and War Office. "Among those who had accepted the invitation to be present"—the notice sent out by the promoters of the scheme does not appear to say who was actually present—one fails to find a single name which has ever been associated with aeronautical affairs, or even with general engineering. African High Commissioners, Imperial Tobaccoists, Polytechnic Educators, and so forth, may be gentlemen of high excellence morally and mentally, but the precise nature of their value in co-ordinating and co-operating the aeronautical industry is not unduly obtrusive.

The last-named acceptant of the promoters' invitation, as Secretary of the Overseas Club, may perhaps have corresponded with aeroplane makers, as the paper which apparently runs the so-called Club has, it seems, induced sundry of our fellow-subjects overseas, or half-way so, to subscribe lavishly towards purchasing for the Government sundry aeroplanes which the Government would buy in any case—considering that it is buying every aeroplane this country can make, and all that neutral countries can make also. If I am not mistaken, this young gentleman was so astute as to foresee the picture-postcard boom some years ago and to profit much thereby. Possibly his matured astuteness leads him to foresee the coming aeroplane boom and to desire to participate in it also. In such case I can assure him that there are better ways of doing so than by throwing in his lot with an undesired and even undesirable affair of this kind.

THE PROMOTERS.

The promoters of the scheme have doubtless the best intentions towards the aircraft industry, the Flying Services, the nation at large, and themselves, but the nature of the scheme, if it comes to anything, seems to afford the greatest advantage to the last-named beneficiaries. Colonel Maude is, of course, well known as a military optimist of considerable eminence. So far, unfortunately, the happy issues which he has so con-

sistently prophesied have not yet come to pass, but if he perseveres he will doubtless be right in the end. As the chief apostle of "strategic retirements," "luring the enemy to destruction," "crushing offensives" in *prospectu* (dim), and so forth, he has been a great success, and his military operations, extending over thousands of miles—of print—have been followed by multitudes who know nothing of strategy or tactics. Therefore he has every claim to attention as a military writer. But one fails to recall any occasion on which he has shown any knowledge of aeronautics or aviation, and therefore one cannot accept him as being entitled to pose as one of the twin Messiahs of British aviation.

M. Blin Desbleds owes much to his sponsors and his ancestors. A native of Mauritius, and therefore a British subject, his French descent has furnished him with an active brain and a name which fastens itself on one's memory—two very important factors in making any man a success in life. He was, or is, I believe, concerned with the education of the young, and I know that he has considerable facility in handling figures and phrases.

In the very early days of aviation he lectured and debated frequently on flying, especially at a little society called the "Aero-Models Association," which, in default of full-sized aeroplanes, studied models seriously, and has since supplied to the aircraft industry a number of its cleverest and most successful aeroplane designers and constructors. Unfortunately for himself, perhaps, M. Desbleds was not among those who went into the practical side of aeroplane design. He continued to lecture while others built aeroplanes. Apparently he was too busy lecturing to keep closely in touch with practical developments, for he was seldom seen at aerodromes, and in some few conversations I have had with him recently I have not been impressed with his practical knowledge of flying machines or flying for naval, military, or civilian purposes. Service aviators will doubtless have come to the same conclusion if they have read his somewhat amorphous articles in Mr. Belloc's weekly paper.

Therein M. Desbleds has been a strenuous advocate of the Separate Air Service Craze, without ever producing a single practical argument as to how the personnel of his hermaphrodite service were to become efficient as sailors and soldiers at one and the same time. Also, he launched forth into paroxysms of pleading for "Ten Thousand Aeroplanes," without any really practical suggestions as to how they were to be produced, manned, or used. His one idea seemed to be an Air Service apart from Navy and Army, equipped with thousands of aeroplanes to go and drop bombs on Essen in a month's time, or the like—happily forgetting that no existing aeroplane could reach Essen with a load of bombs worth dropping and carry enough fuel to get home again.

At one time, M. Desbleds was inclined to hold practical ideas—as on the famous occasion when, in debate with an advocate of "bird-type" aeroplanes, he informed his audience that "when the chief designer of the Admiralty desires to design a Dreadnought, he does not do so by contemplating a bloater"—but, judging by his recent writings, he has taken to theorising on subjects with which he is not thoroughly acquainted. Which is a pity, as it does not inspire that faith in his judgment which one would require if one were to support his "institute."

FINANCIAL DEALINGS.

Perhaps the paragraph which I like least in the prospectus is that proposing that the "institute" should give "technical assistance" to "financial institutions" (whatever they may be), "thus linking up finance with

the aeronautical industry.' So far as I can gather, the aeronautical industry has all the finance it wants at present—at any rate, where firms of good repute are concerned—in spite of taxed war profits; and, anyhow, the tendency is to keep capitals as small as possible for that reason.

Furthermore, I have noticed that where gold has to pass from one place to another through an entirely disinterested conduit, quite a lot of it has a way of sticking to the conduit. Ask any gold-miner. Far be it from me to suggest that Colonel Maude or M. Desbleds desire to form this "institute" merely that some of the gold passing through it may stick to their fingers. I merely say that, whether for financial or co-operative purposes, the "institute" is quite unnecessary, and that as other people would have to come in with the promoters to work the financial machinery, these other people might make war profits of a kind not easily taxed.

THE LABOUR QUESTION.

The third paragraph, proposing that the "institute" should form itself into a kind of labour bureau and technical training school as well, is a trifle ambitious, if nothing else, and it might find itself bumping into the Ministry of Munitions and its pet Labour Exchanges if it tried anything of the kind.

Moreover, there might be difficulty in getting instructors to do the training. Every man who knows anything of aircraft construction is hard at work in factories to-day, and any workman with any experience of metal or woodworking who wants a job in the aircraft industry can get a job if he goes the right way to work. Some aeroplane shops are as full of men as they can hold, but plenty of others are not, and would be very glad to train men to do their special work if they can get the men. A good many managers have recognised the fact that a keen amateur mechanic may be a better workman than one who has served his time in the shops, and plenty of such men have already got good jobs.

There are several ways of getting into aeroplane workshops. The authorised method is for a man to apply at his local Labour Exchange and say he wants an aircraft job. In some cases the local manager will say he has no demand for aircraft workers, and will try to shove men into local factories doing other and uncongenial work. I have come across a case or so where this has occurred, but I must say that when the attention of the Board of Trade has been drawn to the matter it has been put right very promptly.

Another, and perhaps quicker method, is for a man to write round to all the aircraft firms whose names and addresses he knows—there are plenty of them in *THE AEROPLANE* week by week—and ask for a job, stating his capabilities. Of course, the firm is forbidden by law to engage him if he lives more than ten miles away, but if the man mentions in his letter that in the event of his application being regarded favourably he will then apply to his local Labour Exchange for a job with that particular firm, he can generally get through all right, so long as he is not just then working with another munitions firm.

A third way, which only applies to the happily unattached worker, is merely to apply direct to a firm for a job, to make it clear that he has no fixed abode, to state that the address from which he is writing is a purely temporary one, and to say that his permanent address will be the one at which he gets a permanent job. So long as he is not working on munitions work when he applies, such a man can apparently cut out all Government shepherding of his movements altogether.

There is, undoubtedly, a feeling among good-class

workmen that going to a Labour Exchange is only one degree less bad than going to a Workhouse, and the Board of Trade should take some decided step towards removing this feeling. I quite sympathise with the men, for some weeks ago I spent a few hours in a Labour Exchange with a friend who was engaging unskilled men, and I must confess that in a long and misspent life I have never seen such a collection of toughs, criminals, down-and-outs, dead-beats, and unemployables as was paraded before us. If I were thrown on a cold and unsympathetic world I would sooner do time in a decent convict prison than herd with a crowd like that in search of a job.

And, naturally, having to keep some sort of order among such dregs of humanity is not calculated to improve the manners of the Labour Exchange officials when dealing with good-class workmen. This last difficulty is accentuated by the fact that the said officials are frequently youngsters of the clerk class who, without being properly educated themselves, are apt to look down with contempt on the mere manual worker in overalls, though he is generally ten times as good a man. One or two little incidents I saw would have made my fists itch if I had been the man looking for a job.

Yet the Labour Exchanges do certainly do useful work, and I have known of men getting jobs at £300 a year or so by applying thereat. It is a question of personality, I suppose, and one cannot expect all Government employees to be clever, courteous, and also sympathetic to people more or less under their thumbs—as the aircraft industry knows of old. Nevertheless, the higher authorities would do well to look into the working of some Labour Exchanges in the interests of national efficiency.

THE RIGHT PEOPLE.

However, as regards the Maude-Desbleds effort, it seems at best unnecessary. At worst, it is an impertinence. For, apart from the fact that no one whose name has appeared in connection with it has any obvious qualifications to teach either the Government, the industry, or the workman, anything connected with the use or construction of aircraft, there already exist bodies which could do the work if it were needed.

The Aeronautical Society is the recognised technical authority, and though it has been in a state of suspended animation since the outbreak of war, it can be resuscitated whenever it is needed. I believe that the Secretary is employed in the Censor's department with special reference to aeronautical work—if so, I am sure he makes an excellent censor, for he certainly knows the technical end of his job—but if the Government needs a Central Bureau to "render possible the co-operation and co-ordination" of the industry, he can run it from the Aeronautical Society's office better than anyone connected with the grandiloquently self-styled "Aeronautical Institute of Great Britain."

Somehow, that title sticks in one's gullet. It reminds one of Patent Teeth Institutes, and Massage Institutes, and Institutes for supplying Trusses for the Ruptured, and Crutches for the Crumpled, and such things: Institutes which look like charities till one finds that they charge more than ordinary dentists, doctors, and shops, and do not give as good value even then. On the whole, I think the aircraft industry will do well to fight shy of the "Aeronautical Institute of Great Britain" till it can prove that it is not merely supported by *fumistes* and "limelighters," and is a serious scientific institution approved by those controlling the Flying Services, and regarded with favour by the Councils of the Royal Aero Club and of the Aeronautical Society. Meanwhile, it had better be left to work out its own salvation, or damnation.—C. G. G.

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From the "London Gazette," September 28th, 1915.

ADMIRALTY, September 22nd.

R.M.—SUBMARINE MINERS.—Temp. commn. of Lieut. G. R. G. Daglish terminated on appt. as proby. flight lieut., R.N. Air Service, September 22nd. To be temp. lieut.: J. Boyce, September 21st.

* * *

WAR OFFICE, September 28th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—CENTRAL FLYING SCHOOL.—Instrs.—September 5th: Capt. J. L. Jackson, Conn. Rang., a flight com., vice Lieut. (temp. Capt.) E. L. Conran, 21st Lrs.; Lieut. (temp. Capt.) J. E. Tennant, S. Guards, a flight com., vice Lieut. (temp. Capt.) R. P. Mills, R.F.

Officer in charge Exprimtl. Flight (graded as Sqdn. Com.).—Lieut. (temp. Capt.) E. L. Conran, 21st Lrs., a flight com., vice Capt. G. B. Stopford, R.A. September 5th.

MILITARY WING.—Sqdn. Coms., and to be temp. majs. whilst so employed.—September 5th: Capt. G. B. Stopford, R.A.; Capt. F. A. Wanklyn, R.A., from flight com.; Lieut. (temp. Capt.) E. N. Fuller, S.R., from flight com.; Lieut. (temp. Capt.) R. P. Mills, R.F., from an instr., Central Flying Sch.; Capt. G. B. Hynes, R.A., from an eqpmnt. officer. Sept. 12th.

Flying Officers to be Flight Coms.—Sec. Lieut. (temp. Capt.) R. A. Cooper, Hants Yeo. August 30th. September 5th: Capt. G. H. Cox, N. Staffs; Capt. B. F. Moore, R. Warwicks. And to be temp. capt. whilst so employed: Lieut. W. B. Hargrave, Suffolks; Lieut. E. L. Gossage, R.A.; Lieut. E. O. Grenfell, R.A.; Sec. Lieut. L. A. Tilney, D. of Lanc's Own Yeo.; Sec. Lieut. L. Parker, 15th Hrs.

Flying Officer.—Sec. Lieut. J. Latta, S.R. September 10th.

Wing Adjt.—Capt. Lord R. E. Innes-Ker, I. Guards, S.R. September 13th.

Balloon Officers.—September 16th: Sec. Lieut. E. B. Broughton, S.R.; Sec. Lieut. L. E. Brown-Greaves, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: E. B. Broughton, L. E. Brown-Greaves, J. Latta, J. C. Slessor, C. H. Morgan, J. A. Crook.

To be sec. lieuts. (on prob.): B. H. Radford. September 14th. A. Goodfellow. September 24th.

* * *

From the "London Gazette," Supplement, September 29th, 1915.

WAR OFFICE, September 29th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—August 26th: Capt. J. A. Chamier, 33rd Punjabis, I.A.; Lieut. G. S. M. Ashby, R.A., and seconded; Temp. Lieut. G. B. Hobbs, Northd. F. (since decd.). September 7th: Capt. A. C. Boddam-Whetham, A. and S. H., and seconded; Temp. Capt. R. G. Blomfield, Surrey Yeo. Sec. Lieut. W. E. Collison, S.R. September 13th.

* * *

From the "London Gazette," October 1st, 1915.

ADMIRALTY, September 27th.

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut.: L. M. Wilkins. May 2nd. H. G. Henley, L. W. Hodges, R. M. Clifford, C. Perrett, W. L. Graham. May 12th.

Proby. flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service: J. D. Hume. May 12th. C. F. B. Penley. June 7th. H. G. Brackley. June 13th. R. F. E. Wickham. June 26th. R. E. Bush. A. D. W. Allen. July 11th. G. A. Gooderham, A. S. Ince. July 13th. C. R. Mackenzie. July 14th. G.

Smethurst. July 18th. C. Laurence, J. S. Browne, M. J. Gilding. July 19th. W. H. Peberdy, C. N. Geale, C. MacLaurin. July 21st. S. G. Beare. July 22nd. B. F. M. Hughes. July 23rd. C. B. Gasson. July 26th. E. L. Ford. July 29th.

* * *

From the "London Gazette," Supplement, October 2nd, 1915.

WAR OFFICE, October 2nd.

REGULAR FORCES.—SPECIAL APPOINTMENTS.—Graded for pay as D.A.A.G.—Maj. J. T. Dreyer, R.A. April 1st.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Eqpmnt. Officers.—September 1st: Capt. R. C. Donaldson-Hudson, T.F.R., from an asst. eqpmnt. officer; Lieut. G. C. R. Mumby, S.R., from an asst. eqpmnt. officer, and to be temp. capt. whilst so employed; Sec. Lieut. M. Spicer, Northants, from an asst. eqpmnt. officer, and to be temp. capt. whilst so employed; Capt. A. F. A. Hooper, N. Staffs., from a flying officer; Lieut. H. Burchall, S.R., from an asst. eqpmnt. officer, and to be temp. capt. whilst so employed.

Asst. Eqpmnt. Officers.—Temp. Sec. Lieut. H. T. Tizard, R.A., and transd. to Gen. List. July 2nd. August 21st: Sec. Lieut. (temp. Capt.) C. G. Martyn, Monmouths, T.F.; Lieut. F. A. Klipsch, T.F.R. September 3rd: Lieut. J. Sampson, Dorsets, and seconded; Sec. Lieut. C. W. Willcox, S.R.; Sec. Lieut. H. Lee, S.R. Lieut. J. B. Bolitho, Devons, and seconded. September 5th. September 15th: Sec. Lieut. D. Hodgson, N. Cycl. Batt., T.F.; Sec. Lieut. C. H. Morgan, S.R.; Sec. Lieut. C. E. Holaway, S.R.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: W. E. Collison, H. I. F. Yates, C. W. Snook, R. Yates, L. F. Hursthouse. K. Mathewson to be sec. lieut. (on prob.). August 20th.

* * *

A Supplement to the "London Gazette" of October 2nd announces that his Majesty the King has been graciously pleased to confer the Military Cross on various officers in recognition of their gallantry and devotion to duty in the field.

The following refers to R.F.C. :—

TEMPORARY SECOND LIEUTENANT HORACE SCOTT SHIELD, Royal Flying Corps.

For conspicuous gallantry and skill when on patrol duty with Corporal T. Bennett on September 13th, 1915. When over Bois De Biez, at about 10,000 feet, he sighted a German Albatros, and at once dived and attacked it at about 7,000 feet, being subject at the time to heavy anti-aircraft gunfire. The German Albatros used a machine-gun, very conveniently mounted, but Corporal Bennett handled his gun with such skill that he disabled the German machine, which sideslipped and then nose-dived to the ground in our lines. Second Lieutenant Shield has been exceptionally keen in pursuing German machines whenever seen, and on this occasion he manœuvred his own machine with admirable judgment and courage.

SECOND LIEUTENANT (TEMPORARY CAPTAIN) ARTHUR ASHFORD BENJAMIN THOMSON, the Royal Warwickshire Regiment, attached Royal Flying Corps.

For conspicuous gallantry and determination on August 29th, 1915, near Neuve Chapelle. When ranging a heavy gun on the German trenches he stayed up over two hours in heavy rain, with clouds at about 500 feet. At one time he found himself in a cloud on the far side of the German trenches; but, after coming back under heavy fire, he continued to observe with the greatest bravery and skill, only returning when too dark for more work. His gallant conduct resulted in 10 direct hits on the enemy's parapet.

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From the "London Gazette" Supplement, October 4th, 1915.

WAR OFFICE, October 4th.

SPECIAL RESERVE OF OFFICERS—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) E. S. Skipper confirmed in rank.

NAVAL.

The following appointments were notified at the Admiralty on September 28th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieut., R.N.V.R., F. E. Cooper promoted to the rank of temp. lieut.-com., R.N.V.R., to date September 23rd.

The following temp. sub-lieuts., R.N.V.R., promoted to temp. lieuts., to date as stated: W. D. Smiles, September 23rd; G. M. T. Rees, September 24th; and A. Carroll-Marx, September 25th.

The following proby. flight sub-lieuts. confirmed in rank, with original seniority, and reappointed to the "President," additional, for R.N.A.S.: L. H. Wilkins, H. G. Henley, W. L. Graham, L. W. Hodges, and C. Perrett; also the undermentioned proby. flight sub-lieuts. (temp.): B. F. M. Hughes, C. Laurence, R. E. Bush, R. M. Clifford, C. R. Mackenzie, M. J. Golding, J. S. Browne, A. D. W. Allen, H. G. Brackley, S. G. Beare, J. D. Hume, C. B. Gasson, R. F. E. Wickham, C. MacLaurin, G. Smethurst, W. H. Peberdy, A. S. Ince, E. L. Ford, C. F. B. Penley, G. A. Gooderham, and C. N. Geale, all to date September 21st.

Proby. Flight Sub-Lieut. (temp.) W. R. Mackenzie transferred to permanent list of the R.N.A.S., to date September 23rd.

Mr. D. F. H. FitzMaurice granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date September 27th.

Mr. A. B. Ovens entered as proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date October 3rd.

* * *

The following appointment was notified at the Admiralty on September 29th:

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieut., R.N.V.R., W. P. Nicholls, entered as proby. flight sub-lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date September 28th.

* * *

The following appointments were notified at the Admiralty on October 1st:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as proby. flight sub-lieuts., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: C. H. FitzHerbert, October 3rd; G. A. Maclean, October 2nd.

* * *

The following appointments were notified at the Admiralty on October 2nd:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieuts.—M. R.

Buckland and G. N. Lindeman entered as proby. flight sub-lieuts., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date October 1st.

Temp. Hon. Lieut. C. J. Murfitt granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with the R.N.A.S., to date October 1st.

* * *

The following appeared on October 2nd:—

BARNBY—KEELING.—On September 28th, at the Cathedral, Gibraltar, Major A. C. Barnby, Squadron Commander, R.N.A.S., son of the late Sir Joseph and Lady Barnby, to Allis, only daughter of Mrs. Keeling, of Drayton Court and High Salterns, Seaview, Isle of Wight.

* * *

An A.B., Royal Naval Division, at the Dardanelles writes:—"The Hill Achi Baba is only about seven or eight miles from the beach, so the Turks could even shell transports lying at anchor off Cape Helles. We witnessed a good sight one morning; an aeroplane came down on the aviation ground, disabled. It landed facing Achi Baba, and being on the skyline, and the sun shining on the wings, it formed a good target for the Turkish gunners. Well—would you believe me?—they fired forty or fifty high-explosive shells during the morning, and could not hit it. The shells burst all round the machine, some very close, and after about four or five hours' bombardment the biplane got away and flew directly over their lines. They had one more attempt; their 'Archies' got going, but they were wide every time. I can imagine the Turkish gunners' chagrin!"

[Even if the aeroplane had finally been hit it would have paid for itself in the ammunition expended upon it.—Ed.]

* * *

At Marylebone Police Court on September 30th, John Arthur Cecil Scott, aged 25, described as an engineer, of 57, Glenmore Road, Hampstead, was charged before Mr. Garrett with wearing the uniform of a lieutenant of his Majesty's Royal Naval Volunteer Reserve without authority, and further with driving a motor-cycle without a licence.

The accused was granted a temporary commission as lieutenant R.N.V.R. on February 1st, but the commission terminated on May 25th, and since then it was said he had had no right to wear a naval officer's uniform.

Flight Commander Bowhill, R.N., who represented the Admiralty, being asked by the magistrate what led to the termination of the commission, obtained permission to give his answer in writing, and mentioned that "in war time it is an unforgivable sin." The accused, he said, made a paltry excuse.

The police had received several complaints about the accused, and on Tuesday, when he drove up on a motor-cycle, wearing the uniform of a naval lieutenant, he was



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stopped by Police Constable Eyers, 533S, and asked if he was aware that he had an unregistered number on the front of his cycle. "What has that to do with you?" he said, and being asked if he had a licence, he replied, "D— well find out." He was then asked if he was a naval officer, and replied, "Of course I am." ["Be'aves just like an orficer"—as the old Navy story has it.—Ed.]

He struggled very much for a while when arrested, and on being charged exclaimed, "This is what I come to for fighting for my country."

Later he produced a motor licence, which had expired on the 8th inst., and as proof that he had authority to wear the uniform he sent for his commission as temporary lieutenant. The Admiralty were communicated with, and in consequence the accused was charged.

Accused urged that he had had no official instructions from the Admiralty not to wear the uniform, and having been offered a commission in the Royal Flying Corps, he put on his naval lieutenant's uniform for the purpose of getting into the War Office, "as it was such an awful difficulty to do so in the ordinary way."

The young gentleman (temporary) was remanded.

MILITARY.

The following paragraph in the despatch dated 10.58 p.m., September 28th, received from Field-Marshal Sir John French early on September 29th, deals with aircraft:

Our aeroplanes today bombed the railway line near Bapaume, wrecking a train. They also damaged the railway near Achiet-le-Grand.

* * *

The following paragraphs in the despatch, dated 9.18 p.m., October 1st, received from Field-Marshal Sir John French, deals with aircraft:—

During the last seven days our aircraft have been very active. Seventeen air combats are reported, in only one of which was the British machine worsted.

A German machine was brought down inside our lines yesterday.

Attacks have been made on the railways in the hostile area. The main lines are known to have been damaged in fifteen different places. Five and probably six trains were partially wrecked, and the locomotive sheds at Valenciennes were set on fire. Considerable interference has thus been caused to the German railway organisation.

[These 17 combats should be added to the 27 recorded by Mr. Prevost Battersby on the 26th, and the 40 recorded up to the 18th by Mr. Phillips—as noted last week—making 84 combats during September, in which only one British machine was worsted—a record of which the R.F.C. may be duly proud.—Ed.]

* * *

The following Order of the Day was issued by Field-Marshal Sir John French, O.M., G.C.B., G.C.V.O., K.C.M.G., etc., etc., under date October 4th:—

The Field-Marshal Commanding-in-Chief desires to express to Brigadier-General H. M. Trenchard, C.B., **D.S.O., J.D.C.**, and all ranks of the Royal Flying Corps, his appreciation of the valuable work they have performed during the battle which commenced on the 25th September.

He recognises the extremely adverse weather conditions, which entailed flying under heavy fire at very low altitudes. He desires especially to thank pilots and observers for their plucky work in co-operation with the artillery, in photography, and the bomb attacks on the enemy's railways, which were of great value in interrupting his communications.

Throughout these operations the Royal Flying Corps have gallantly maintained the splendid record they have achieved since the commencement of the campaign.

The undermentioned casualties in the Expeditionary Force were reported on September 29th under date September 22nd:—

MISSING.

Caws, Sec. Lieut. S. W., Royal Flying Corps.

Sugden-Wilson, Lieut. W. H., W. Somerset Yeo., att'd. Royal Flying Corps.

[Judging from the German communiqué of September 22nd, which states that a British aeroplane was shot down, in which the pilot was killed and the passenger taken prisoner, it is to be feared that Mr. Caws has lost his life.]

S. W. Caws, who was a cousin of Mr. Handley Page, the well-known aeroplane constructor, came over to England as a sergeant in the first Canadian Contingent. He learned to fly at the Beatty School, and later went to the R.F.C. School at Brooklands, whence he was given a commission in the R.F.C. Though by no means a young man he proved to be a sound and reliable pilot, probably because he was a notably good horseman, and his experience of roughing it for years in the waste places of the earth made him a resourceful soldier. He was a splendid specimen of Colonial manhood and possessed an engaging personality, and will be sincerely missed by all in his squadron.

* * *

The following casualties in the Expeditionary Force were reported on October 2nd under date September 25th:

Previously officially reported Missing, now unofficially reported Prisoners of War.

Scholefield, Sec. Lieut. E. R. C., Royal Flying Corps.

Wilson, Capt. J. F. C., 6th Cameronians (T.F.), att'd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on October 4th under date September 26th:

MISSING.

Greenhow, Sec. Lieut. M. W., W. Yorkshire, att'd. Royal Flying Corps.

Washington, Sec. Lieut. J. N., Manchester Regt. and Royal Flying Corps.

* * *

The following casualty in the Australian Imperial Force with the Mediterranean Expeditionary Force was reported on October 4th without date:—

PRISONER OF WAR.

Treloar, Capt. W. N., Australian Royal Flying Corps.

* * *

On September 28th a Hounslow coroner's jury returned a verdict of accidental death in the case of the late Captain Bindon Blood, 4th Hussars and R.F.C., who died from burns incurred in the accident to an S.E.4, as noted last week.

The evidence of Lieut. Sanderson and Capt. Burnett showed that deceased in doing some sharp turns on September 24th lost control of his machine, and before he could recover it came to the ground. The petrol tank burst and deceased was enveloped in flames. He was at once removed to hospital, but succumbed next morning.

* * *

Officers and men of the R.F.C. will learn with deep regret of the death of Capt. A. Moutray Read, who was killed in action near Hulluch on the night of September 24th-25th.

Anketell Moutray Read was the youngest son of the late Col. J. Moutray Read, and was born on October 27th, 1884. He was educated at Glenarth, Cheltenham, and the United Services College, Westward Ho! where he was an officer of the cadet corps. He passed direct into Sandhurst in 1901, and was gazetted to the Gloucester Regiment, the old 28th, serving three years with that unit in India. While there he transferred to the 7th Hariana Lancers, of the Indian Army. In 1911 he exchanged into the Northampton (48th Foot), and in 1912

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he was seconded to the Royal Flying Corps. While stationed at Montrose he had a serious motor-cycle accident, which laid him up for a long time, but he rejoined and went to France with the R.F.C. on August 11th, 1914, and served at Maubeuge and Mons, and during the retreat to the Marne.

Later he was attached to the 9th Lancers, and while with them was severely injured during the fighting on the Aisne in September. On his recovery he rejoined the Northampton in the trenches some six months ago, and at the time of his death was temporarily in command of the battalion, owing to casualties.

He was personally a highly popular officer, and had a great reputation as an athlete. While in India he won the Heavy-Weight Championship for boxing eight times, and the Middle-Weight twice, winning heavy and middle at the same meetings. He also won the Army and Navy Heavy-Weight Championship three times at Aldershot and Portsmouth, thus setting up an equalled record for Service boxing. As one of his judges said, "Read wins because he never accepts defeat and never knows when he is beaten."

To those who knew him well, all words of appreciation must be inadequate, but these few notes may serve to put on record the loss the Service has sustained by the death of one who was an officer, a gentleman, and a sportsman of a very high type.

* * *

The following notes by a correspondent of the "Morning Post"—apparently Mr. Prevost Battersby—on the work of the R.F.C. during the fighting on September 26th and 27th, gives an excellent idea of the proceedings:—

"Never was the value of British aircraft more clearly demonstrated than during the operations of the past two days. They have been invaluable for reconnaissance above the German lines. Last week there were twenty-seven fights with enemy aircraft that sought to hamper their return. At least one German machine was destroyed, and in only one instance was a British airman defeated.

"In the present operations they have been bombing important railway junctions and troop trains with great success. Valenciennes—one of the most important arteries in the enemy system of communications for this front—was attacked, the lines torn up, and the station buildings set alight.

"Attacks on the German railway communications south of Lille began on the 23rd, when a supply train was bombed and damaged, as well as the line. Next day another line was damaged in three places. On the 25th an airman sighted a train filled with reserves. He flew so low that he was able to drop a bomb squarely on the forward end of the train, destroying three coaches and the engine, and cutting the line in four places.

"A similar 'hit' was scored on the 26th, when several coaches of a troop train were wrecked in one instance and an engine and two coaches derailed in another.

"During one of these flying shots at a troop train the bomb-dropper saw that the train had stopped. His first bomb fell just ahead of it. Immediately the soldiers poured out of the coaches to see what was the matter. The aeroplane calmly dived again and a 100 lb. bomb was planted in the centre of the crowd of sky-gazers with excellent effect.

"Two aeroplanes went soaring towards Hill 70 just before four o'clock this afternoon, made a leisurely tour above the scene of conflict, and came back with a detailed report about the enemy movements in time for tea. There have been instances in the past three days, however, of a pilot and observer remaining aloft over hostile territory for two hours, at a height of seven thousand feet."

* * *

An artillery officer writing on September 26th, describing the fighting on the 24th, says:—

"As evening fell our aeroplanes climbed the sky to survey the Hun position, and kept at their work despite frenzied fire from the German aircraft guns and a feeble tentative on the part of a couple of their Aviatiks, who mounted to fight and then decided to run away.

"So far as this little bit of the heavens is concerned, it is certainly ours. The German air service is beaten every time, and when our airmen make an appointment to observe for the artillery the appointment is kept with never a failure. The Huns cannot keep us out of the air, and we can and do keep them."

[For which fact the Army may thank Vickers gun-carriers, Avros, and Bristol scouts more than anything else.—Ed.]

* * *

The following comments on military aviation appeared in the "Morning Post" on October 4th, written by that paper's correspondent at General Headquarters in France:

A most significant feature of the present advance, however, is the activity of the air fleet in damaging the railway communications at vital spots away behind the German lines. There can be no doubt that this is handicapping their movements very seriously, the more so as our aviators are keeping at it, and are practically making daily raids. In this way the Germans will be prevented from rushing strong reinforcements from one part of their line to another, as they were in the habit of doing.

Many people used to criticise our air fleet for not adopting these tactics long ago, but their hour had not come,

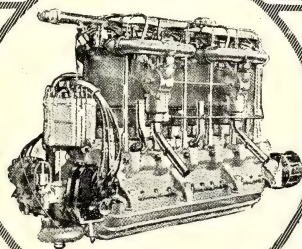


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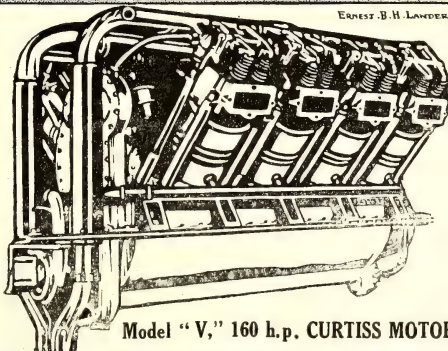
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and by displaying their methods before the time was ripe for putting them into general execution they would have given the enemy full opportunity for evolving plans either for defence or for more rapid repair arrangements along his railway lines. As it is, our aeroplanes are able to fly very low, so as to make quite sure of their aim.

[Here this usually well-informed correspondent is wrong. At the outbreak of war, bomb-dropping was not regarded as serious work for aviators. Nevertheless, by way of relaxation from routine reconnaissance, some pilots were allowed to do a little bombing as a sporting venture—as, for instance, when Capt. Mapplebeck won his D.S.O. by blowing up a train of motor-lorries laden with ammunition. At that time there were no big bombs in existence, there was no proper bomb-dropping gear, and there was no bomb-sighting apparatus worth mentioning. Therefore, the true reason "for not adopting these tactics long ago" is that there was no possibility of adopting them. Some of us criticised the people controlling the "air fleet," but we did not criticise the "air fleet" itself.—Ed.]

FRANCE.

The afternoon communiqué of September 30th says:—

In spite of the most unfavourable atmospheric conditions our air squadron bombarded yesterday the lines of communication in the rear of the German front. Shells were also thrown on the railway stations of the valley of the Suipe, Bazancourt, Warmerville, Pont Faverger, Saint Hilaire le Petit, and on a column marching near Somme-Py.

The evening communiqué of September 30th says:—

A squadron of aeroplanes to-day dropped 72 bombs on the railway station of Guignicourt. The bombardment appears to have been very effective. The aeroplanes were violently cannonaded, but returned in safety to their base.

* * *

The communiqué of October 1st says:—

Our dirigible "Alsace" bombarded during the night of September 30th the junction of Amagne-Lycquy, the station of Attigny, and the station of Vouziers. It was fired at all along its route, particularly at Vouziers, where it was surrounded with bursting incendiary shells. The airship returned safely to its base after fulfilling its mission. It was struck by some fragments of shells, which did no real damage.

* * *

The afternoon communiqué of October 2nd says:—

Our air squadrons threw a very large number of projectiles upon the railway stations and lines behind the enemy's front, notably upon the bifurcation from Guignicourt to Ami Fontaine.

Our gun-planes (*avions-canon*) carried out during the night a bombardment of the German lines.

The evening communiqué of October 2nd says:—

In Champagne one of our armed aeroplanes hit an enemy captive balloon, which burst into flames.

A squadron of sixty-five aeroplanes to-day bombarded the station of Vouziers and the aviation ground near the town and the station of Challenger. Over three hundred shells were dropped on the objectives, which were struck.

Another bombardment cut in two a train travelling near the station of Laon.

* * *

The communiqué of October 3rd says:—

A squadron of our aeroplanes this morning bombarded the station, the railway bridge and the military buildings of Luxembourg.

[One notes with interest that France has overcome her natural objection to bombarding neutral territory when

that territory is occupied by enemy forces. The German note on this event is quaint.—Ed.]

* * *

The afternoon communiqué of October 4th says:—

One of our air squadrons has dropped forty large calibre bombs on the Sablons railway Station at Metz. Other aeroplanes have carried on the bombardment of the railway lines, junctions, and stations behind the German front.

The evening communiqué of October 4th says:—

An enemy aeroplane was forced to come down within our lines. The two officers who occupied it were made prisoners.

GERMANY.

The communiqué of September 29th says:—

In Flanders two British aeroplanes were shot down and the occupants captured.

* * *

The communiqué of September 30th says:—

Army group of General von Linsingen.—On the Upper Goryn the Russians were repulsed in an easterly direction. . . . Two Russian aeroplanes were shot down.

* * *

The communiqué of October 1st says:—

French aviators bombarded Henin and Lieterard, killing eight French civilians. We suffered no losses.

* * *

The communiqué of October 2nd says:—

An enemy aerial squadron from Paris, attacking Laon, killed one woman and one child, and severely wounded a civilian. Our anti-aircraft guns shot down one of the aeroplanes south of Laon, the occupants being taken prisoners.

Another enemy aeroplane at Soissons fell to the ground on fire.

* * *

The communiqué of October 3rd says:—

The enemy repeated his aerial attacks on Laon and Vouziers. At both places several civilians were again the victims of bombs.

In the district of Rethel the French airship "Alsace" was forced to land, and the crew were taken prisoners.

At 8.30 this morning French aviators dropped bombs on the neutral town of Luxembourg. Two soldiers, one workman, and one shopgirl were wounded.

[It is curious that the French communiqué makes no mention of the loss of the "Alsace," which did good work on September 30th, and was apparently hit on October 2nd, and compelled to descend.—Ed.]

* * *

The communiqué of October 4th says:—

Last night one of our airships successfully bombarded the railway station at Chalons, which is the chief point of concentration for the reserves of the French attacking forces.

* * *

The Maestricht correspondent of the "Maesbode" (Rotterdam, September 29th), reported, "Yesterday 21 of the Allies' aeroplanes flew over Aix-la-Chapelle and dropped bombs. It is reported that Roteerde is on fire. Only one bomb fell on the station."

Roteerde, though a small place, is of great importance, being situated on the railway to Cologne, at the junction of strategic lines running to the West German frontier. There are also at this place important steel works.

AUSTRIA.

The communiqué of September 30th says:—

In the moorland near Kormin Austro-Hungarian and German troops stormed several vantage points. . . . Two hostile aeroplanes were shot down.

[Probably the same two aeroplanes mentioned in the German communiqué of the same date.—Ed.]

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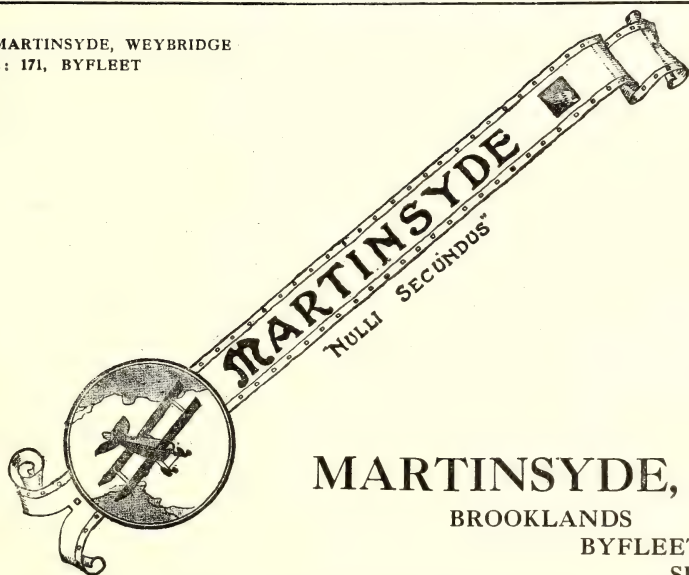
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ITALY.

The communiqué of September 30th says:—

A hostile seaplane dropped two bombs on Porto Buso. There were no victims and no damage was done. Our aviators bombarded, apparently effectively, some places in the Carso, indicated as the headquarters of the Austrian commanders.—CADORNA.

The communiqué of October 2nd says:—

An enemy aeroplane yesterday dropped some bombs near the station of Cervignano, wounding two civilians. Two other aeroplanes attempted to raid our positions on the Carso, but were driven off by our anti-aircraft guns.

* * *

A correspondent in Milan writes:—

"I have just got your issue of the 15th inst., and read the report sent by your Italian correspondent on the terrible accident—the first accident of any sort which ever happened on any Savoia machine since the firm began manufacturing Farman machines in Italy two years ago—on the 4th inst. at the Savoia Aerodrome at Cascina Costa. As the reason given for the catastrophe is grossly inaccurate, being taken from a telephone message sent by a casual witness and accepted in the local daily press, which was rectified the next day, I feel it my duty for the reassurance of our fellow-pilots to give you the true explanation as it resulted from the official inquiry.

"The pilot Resmini left the ground normally with a passenger, Lieut. Ricci, on one of the 'Savoia-M. Farman' 100 h.p., which was to go through the prescribed climbing test at full load. It was evident to all the witnesses, officers, pilots, and pupils, on the ground, that poor Resmini made at once a too bold attempt to reach the prescribed altitude too quickly; he was so confident with the machine that he apparently overlooked that his machine was 'cabré' to such a dangerous extent that at an altitude of about 900 feet the aeroplane was seen climbing almost to a vertical angle with the fatal unavoidable result that losing its speed the heavy loaded machine fell sideways and crashed to the ground with the engine 'full on.' The ensuing terrible shock caused, naturally, the explosion of the 40-gallon benzine tank, setting the whole machine on fire. Mercifully the two poor fellows were instantaneously killed by the fall, avoiding the horrible death by fire."

* * *

Vicenza has been visited by the Poet "Laureate" of Italy, "Gabriel of the Annunciation," as some slight consolation for the town's repeated bombing by the 'planes of the Austrian. It is understood that the Poet's brows were only crowned metaphorically with laurel on this occasion, a helmet offering greater protection to the head that could ill be spared from the work of sustaining the morale and inspiration of his countrymen at this juncture of their national life. It is not clearly realised that "Gabriele D'Annunzio," after years of voluntary exile while his country was allied to its national enemy, has returned with the mission of announcing the birth to the Motherland of the epoch of her release from the slavery of the northerner.

* * *

Lieut. Porro has been promoted to captaincy "pour mérite de guerre" as reward for a brilliant operation in the air, to be divulged, one hopes, before all the other secrets are released and while there remains space available for its relating.—T. S. HARVEY.

RUSSIA.

It is now officially known that Captain Nesterof, the famous Russian aviator, was killed in a duel in the air. Captain Nesterof was actually the first man to loop the loop, and when he did so he was put under arrest for some three weeks for endangering Government property. It is

certainly a curious coincidence that the first and second men to loop should both have been killed in aerial duels.

* * *

A note from Petrograd will be of interest to many French readers of THE AEROPLANE. It states that L. E. Sokurinsky, who will be remembered by many as mechanic to MM. Garros, Chevillard and Leblanc and other aviators, is now doing good service in the Russian Flying Corps. He learned flying at the Pau aerodrome some time ago, and then went to Dijon. When war broke out he joined the French Flying Corps, and afterwards returned to Russia.

* * *

The Petrograd correspondent of the "Morning Post" reported on October 4th:—

The Russians recently brought down three aeroplanes, among them one which proves a rare prize, namely, the newest pattern German machine, which several times has been seen on the Western front, where it has been variously described as a bi-mono-plane and a triplane.—[Which it has not been, and could not be. The general description is a bi-fuselage biplane.—Ed.] On the Russian front this new pattern appeared first in August. Last week a Russian aeroplane attacked and lured over artillery positions one of these new machines.—[Which means that the Russian wisely ran away.—Ed.] The gunners, after narrowly missing their own aeroplane, whose occupants had an uncomfortably lively time, hit the German in such a manner as to upset his stability and compel him to plane down, which he did safely till within forty feet of the ground, when he fell inside the Russian positions and was captured, having received only slight damage.

The Russians have christened this novel machine "Two-tails." On examination it proves to be nothing very alarming, and is little more than a German version of the Russian Sikorsky. "Two-tails" is armoured and has twin engines of the Albatros or Mercedes static motor type, 170-h.p. Between the twin bodies and raised above them is the pilot's place, also armoured. It carries altogether six men and nearly a ton of ammunition for one light quick-firing gun and two Maxims. The crew consists of a pilot, with a mechanic, an observation officer, and three artillerymen. Russian comment on the new German "Two-tails" notes with satisfaction that this acceptance of certain principles attained by the Sikorsky monster planes is a proof that Germany, which recently mocked openly at aeroplanes as compared with airships, is now disposed to revise her opinions in the light of her war experiences with the boasted Zeppelins. I take the above details from the "Rusky Slovo."—[The technical details, which bear the appearance of probable accuracy, are of interest, but the usual Russian brag that the machine is a German version of the Sikorsky is absurd. There is no resemblance whatever between the two, and, if anything, the German machine is derived from the Italian Caproni. Does the "Morning Post" realise how much the tone of their Petrograd correspondent irritates the better class of reader, and how he tends to alienate their sympathy from Russia?—Ed.]

SERVIA.

The following communiqué dated the 27th inst., was issued by the Press Bureau at Nish:—

On the 24th inst. enemy aeroplanes flew over Pozarevat and dropped 22 bombs, killing three men, but causing no damage, nor any loss from a military point of view.

On the 25th inst. enemy aeroplanes again flew over Pozarevat, and again threw bombs, with the result that one man was killed.

* * *

The following official report was issued at Nish on October 2nd:—

On September 20th, between 4 and 6 p.m., seven

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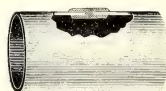
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enemy aeroplanes flew over Pozarevat, dropping about 60 bombs on the town and its outskirts. One civilian was killed and two soldiers and three civilians were wounded. Pozarevat is not a camp or a point of military importance.

On September 30th, between 7 and 8 a.m., five or six enemy aeroplanes flew over Kragujevat, dropping about 30 bombs. One enemy aeroplane was hit by our artillery and fell in flames in the centre of the town. The aviators were burned to death.

* * *

The following official statement was issued at Nish on October 1st, and delayed in transit, only being published in London on October 4th:—

On September 30th enemy aircraft dropped 43 bombs, killing five persons and wounding ten. Three bombs fell on the station at Lapovo, the junction of the Belgrade-Nish and Belgrade-Kragujevat lines. No damage was done. Near Kragujevat the wing of an aeroplane was found. Another aeroplane must, therefore, have come down near Kragujevat besides the one which was brought down at Kragujevat.

* * *

A report issued on October 4th says:—

The two enemy aviators who came down at Kragujevat were Germans. They had orders to bomb the southern parts of the town.

ROMANIA.

A Bucharest message to Paris on October 2nd states that a German aviator flew over the Rumanian town of Calafat on the previous day at about 2,500 feet. Rumanian infantrymen fired at the aeroplane, which turned about, and, flying north-west, landed at Palanka, just over the frontier in Bulgarian territory.

SWEDEN.

A report from Stockholm, dated October 2nd, says that the capsize German seaplane, "with the inscription 'F F 33, E NR 94,' was brought into Smyge, on the coast of Scania, last night. It appears to have been built at Friedrichshafen last July."

[This is of interest as indicating that the Friedrichshafen aeroplane works—a branch of the Zeppelin Co.—are still doing aeroplane work and have not been turned out airship parts.—Ed.]

U. S. A.

The "Winnipeg Evening Tribune" states that Rear

Admiral Bradley A. Fiske, U.S.N., former chief of operations of the Navy Department, is the inventor of a flying torpedo boat on which patents have just been granted by the U.S. Patent Office. Admiral Fiske's flying boat is designed for a great carrying capacity, and is equipped with apparatus to carry and launch from the air the regulation Whitehead torpedo. The torpedo dropped from a great height has its propelling mechanism started by the impact with the water, and so can be directed against warships which are under ordinary circumstances safe inside a fortified harbour.

[It would be interesting to know to what extent this invention is antedated.—Ed.]

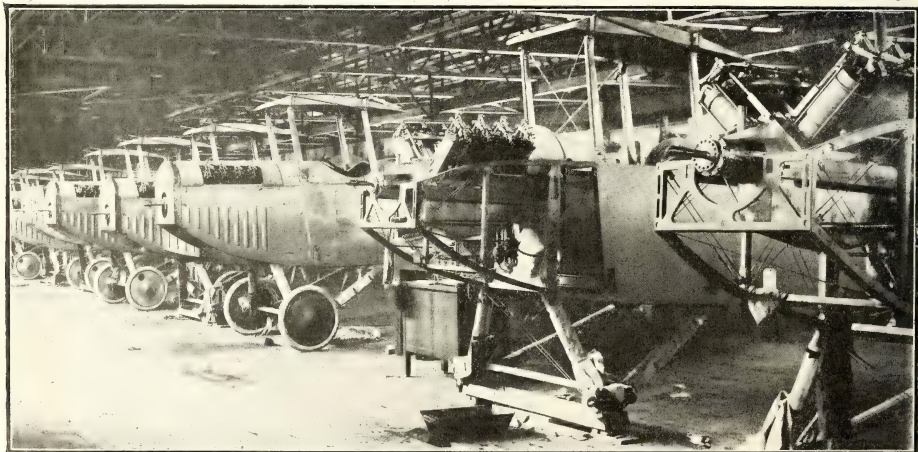
AUSTRALIA.

The "Melbourne Age" of August 3rd publishes an account of work performed by Australian Military aviators.

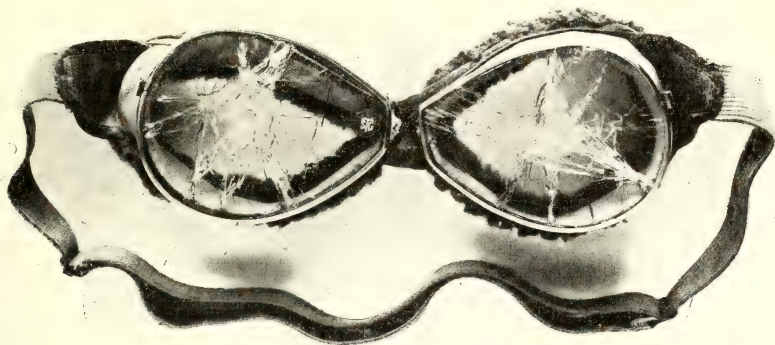
The Australian Half Flight under the command of Captain Petre is doing good reconnaissance work in the neighbourhood of the River Tigris. This is the first occasion upon which an Australian aeroplane unit has actually flown on active service, although aviators were sent with the expedition to German New Guinea. A report received from the officer commanding the flight has been made available by the Minister of Defence. The report reads as follows:—

"In addition to the personnel from Australia, the following officers had been obtained:—Major (then Captain) Broke-Smith, late R.F.C.; Major (then Captain) Reilly, R.F.C.; Lieut. Burn, New Zealand Staff Corps; and 2nd Lieut. Wills, Indian Army Reserve. Major Reilly has already seen service in Belgium and in Egypt. The following N.C.O.'s and men were also provided:—Four partially trained sergeants, six trained motor drivers and six native mechanics. The organisation aimed at was a base for supplies and repairs, including a workshop and stores, this base being under the command of Major Broke-Smith, and a squadron of one flight at first, afterwards to be enlarged to its full establishment of three flights, under Major Reilly. Lieut. Burn is a flying officer, and 2nd Lieut. Wills is in charge of the workshop at the base.

"Although the personnel and stores provided by Australia were only intended for one half flight, with first and second line transport and no base, they have been relied on to a very large extent to make up the much larger organisation outlined above. This fact, coupled with the short hours of work due to excessive heat, and to frequent sickness due to the same cause, means that we constantly



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find ourselves very shorthanded. I am pleased to be able to state that the Australian N.C.O.s and men have created an extremely favourable impression upon all officers whom they have come into contact with on account of their ability as air mechanics, and particularly on account of their smart and soldierly appearance.

"I will now give a brief summary of the work that has so far been done. We have at present only two Maurice Farman biplanes, with one spare engine. These engines were landed at the flying ground about May 24th, and the first reconnaissance flights were made on May 31st. The difference which the use of aircraft has made in this campaign is truly amazing. Though for many months no advance beyond — has been possible, from the first day that the aeroplanes were employed the Turkish forces have retreated continuously, and the country is now clear of them as far up the River Tigris as —. The cause suggested for this is twofold: as regards the Arabs, they are completely cowed by the very sight of an aeroplane, of which they evidently had no previous knowledge. As regards the Turks, they take the use of aircraft as a sign of a completely equipped and organised army, and are inclined to give in. As regards the climate conditions, as you probably know, it never rains, and the heat in the day is excessive, being usually over 110 deg. in the shade. In spite of this the air is generally still for flying. I have flown at all hours of the day, and have only on one occasion experienced bad remous, but I must say that then they were very bad indeed.

"The flight, with the greater portion of the 6th division, is at present stationed at —, on the Tigris, and came here in two portions; one portion in a motor-boat, following Major Reilly on 5th inst., after I had obtained a new engine for my machine. The engine failure referred to seems to have been caused through the oil losing its lubricating properties on account of the prolonged heat. It occurred at the end of a flight of three hours five minutes, following other flights, which in the day totalled five hours. When I say that at sunrise it is possible to fly at an altitude of 5,000 feet wearing a khaki drill jacket and a thin cotton shirt only, without feeling at all cold, it will give a good idea of the conditions under which the engine (70-h.p. Renault) has to work."

* * *

Lieut. George Pinnock Merz, writing on June 18th to his father, Mr. George Merz, of Ballarat, from the base camp of the Flying Corps in the Persian Gulf, to which he is attached, states:—"There has been a good deal of fighting. The heat forced both sides to rest a while, but I expect to be at the base camp for some time. The hot weather has been so bad that hundreds of the British soldiers are in hospital from heat stroke, and a number of them have died. The Flying Corps has been compelled to use smoke glasses, spine pads, short pants and big helmets. The perspiration runs off the men every day in steady streams. The Flying Corps is fairly comfortable, and is living in palm leaf and bamboo huts."

* * *

It is now reported that the aeroplane with which Lieut. G. P. Merz disappeared at Bussorah has been found damaged in the desert, which indicates pretty conclusively that the aviator and Lieut. Burn, who was observer, are in the hands of the Arabs or Turks.

* * *

It is reported that the following officers have been appointed to attend the current course of instruction at the Central Flying School, Werribee:—

Lieut. L. J. Wackett, permanent forces; Lieut. E. G. Roberts, 48th Infantry; and Second Lieutenants R. Ross (34th Fortress Coy.), F. H. M'Narama (47th Infantry), C. D. Merrett (51st Infantry), and A. W. L. Ellis (64th Infantry).

These officers have all been drawn from Victoria.

FROM DENMARK.

From the official German reports and those of alien newspapers, "Flugsport" comes to the conclusion that the allies have lost at least 135 aeroplanes, shot down by German and Austrian troops, commenting thus hereon: "It is interesting to learn thereby the offensive spirit of our enemies. While the French undertake long, daring raids over the Black Forest, Baden, Elsass-Lorraine and the Rhine country, the English almost confine themselves on small raids from their little front in Belgium. Few English officers only raided into Germany, where they met then their fate. [Only one so far.—Ed.] But on the other hand, the English waterplanes carried out frequent and extended raids over the North Sea on the Belgium and German coasts. [Curious the Germans should know about these unannounced raids on the German coast.—Ed.]

"The French waterplanes undertook no raids at all, though better organised in times of peace, confining themselves to the bombardment of some Belgium harbours, now held by the Germans. Further, one must confess the French aviators to be better turned out and more capable of orientating, as they only seldom go astray over neutral country. Quite a fair per cent. of the English aviators, on the other hand, landed on German domain. [That is to say, presumably, French or Belgian territory held by the Germans. Probably the landings were due to defective engines rather than to loss of direction.—Ed.]

"Of the French aviators, 21 aeroplanes were shot down over real German country, eventual forced to land. Off our front in France 22 machines were forced to alight, and six in Belgium. Two French aeroplanes descended in Swiss, two in Holland, being interned there, while two further French officers, conferred upon the Montenegrins, came to the roll of honour by Austrian ordnance.

"Out of the number of 57 'flight-incapable aeroplanes' 11 were ultimately finished in aerial combat with German machines. Well-known persons among the French aviators shot down were the Deputy Girod [Who is still in Paris.—Ed.], Senator Reymond, Gaubert, Garros and Radel.

"Of the English aviators, six were finished over German domain. [There have only been twelve or fourteen British aviators over German domain altogether, and only one was brought down.—Ed.]. Further six fell in France, and no less than 22 were brought down by German troops in Belgium. [But very few were killed.—Ed.] Too close an approach of the Turkish batteries cost five English aviators their ends [None have been killed at all by Turkish fire.—Ed.], and eight English airmen were interned in Holland on having flown astray there. Two English aeroplanes were found drifting in the North Sea by Dutch steamers, which rescued their pilots and passengers. And it is worth drawing attention to that in aerial combats with the Germans no less than nine Englishmen were overcome over Belgium ground off the German front. The English having thus lost hitherto 47 aeroplanes. [Modest estimate that.—Ed.]

"Not possessing as extended an air service as France and England, the Russian Army registers a loss of 26 machines. Yet it is just here rather difficult to establish the definite Russian losses owing to the huge front from the Baltic Sea to the Caucasian mountains, as in the vast woods and morasses many airmen have likely come to grief, without it getting known to the public.

"By Przemyśl the Russians have lost no less than six aeroplanes, three of them belonging to the giant Sikorsky type. So far as is known Belgium has lost four aeroplanes, one of these alighting on Dutch ground. Of Italian losses that of the airship 'Citta di Ferrara' has only hitherto been known, though felt so much the more severe."



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THE R.N.A.S. COMFORTS FUND.

Some doubt may exist in the minds of those who may wish to contribute to the welfare of the men of the Royal Naval Air Service as to whether anything extra in the nature of creature comforts is now really necessary.

As a matter of fact, the Admiralty supply of suitable clothing to all non-commissioned ranks is so nearly adequate that the urgency for gifts of woollen garments has diminished to a very great extent. Still, there are cases of local shortage where a punctual supply of clothing may be very welcome pending the arrival of official supplies, and it is hoped, therefore, that friends of the Royal Naval Air Service will carry on their good work throughout the coming winter.

Although the demand for clothing is therefore not so great, there are other comforts which only a Utopian Admiralty could be expected to supply—although, of course, Utopia would scarcely possess a navy. These comforts are more of a mental and even psychological nature than physical, and embrace such things as gramophones, pipes, tobacco, sweets, jams, cakes, books, magazines, and so forth—articles whose calorific value, in warming the heart, cannot be calibrated, yet which have a most profound influence on the spirits and therefore on the efficiency of the men.

Air-mechanics who have been accustomed to the pleasures and excitements of big towns find lonely air stations, and still more lonely aircraft-carrying ships, fearfully depressing; and the monotonous though wholesome Service diet soon becomes as insipid as prison fare.

Any contributions, therefore, which come from donors who imply that they do not necessarily wish their remittances to be devoted exclusively to the purchase of clothing will be doubly welcome, and a word in covering notes will relieve Mrs. Sueter of any anxiety she may feel as to whether the Fund is spending money entrusted to it in the manner most desired by the senders.

Wing-Commander Longmore, R.N., writing from Dunkirk on September 23rd, says: "Dear Mrs. Sueter,—I wish to thank you on behalf of the petty officers and men for the three footballs which have arrived. Your gift is much appreciated."

Particular thanks are due to Mrs. Balfour and Mrs. Duff, of Oxford, who sent a very large consignment of comforts to the R.N.A.S. men at the Dardanelles.

Further contributions should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

Notwithstanding the foregoing, the need for woollen garments has far from disappeared. Mrs. Sueter has just received a request from the detachment of the Royal Naval Air Service at the Dardanelles for comforts for 400 men. The garments required are jerseys, pants, vests, helmets, and socks, and the larger and consequently more difficult garments to make are naturally much more in request than are the smaller articles. That is to say, twenty shillings' worth of vests are of considerably more use to the Fund than twenty shillings' worth of gloves or socks.

The 400 men for whom this particular request is being made are actually R.N.A.S. air-mechanics, etc., and not the crews of the seaplane-carriers, who are R.N. seamen, and the articles should be khaki, and not blue.

Mrs. Samson, the Grand Hotel, Trafalgar Square, S.W., and Mrs. Thomson, 10, Great Stanhope Street, W., have kindly consented to assist Mrs. Sueter by receiving comforts at the addresses indicated. Cheques should be sent to Mrs. Sueter.

THE NEEDS OF THE ROYAL FLYING CORPS.

At the sale to be held under Royal patronage at the Albert Hall by the Professional Classes War Relief Council early in December, gifts suitable for the officers and men of the Royal Flying Corps are to be made a speciality.

The following articles are required: Stockings, socks, long gauntlet gloves, mittens to the elbow (with only a

hole for the thumb), helmets (closely knitted and of very warm wool), mufflers (16 ins. wide, $1\frac{1}{2}$ to 2 yards long), cardigan jackets. Appeal is also made for thermos flasks, snow boots or goloshes, and leather waistcoats.

All gifts should be addressed to the Gifts Secretary, 13 and 14, Prince's Gate, London, S.W., and should be received not later than November 22nd.

* * *

The following advertisement appeared in the "Times": "THE ROYAL FLYING CORPS IN THE PERSIAN GULF.—Will anyone kindly contribute towards the Fund for sending comforts and clothing to our men of the above Corps in the Persian Gulf? Donations of cash, clothing, or comforts will be gratefully received by the Rev. Canon and Mrs. Langford, Southbrook, Starcross, Devon. Particulars of articles required will be given on application."

[To avoid diffusion of energy it would be well if the reverend gentleman would join forces with the Royal Flying Corps Aid Committee at Surrey House, Marble Arch, W.—Ed.]

* * *

The following interesting letter shows how widespread is the work of the R.F.C.A. Committee:—

"South African Aviation, The Castle, Cape Town.

"25/8/15.

"The Secretary, Royal Flying Corps Aid Committee.

"Dear Madam,—I have the honour to acknowledge the receipt of your letter of the 8th July, enclosing receipt from the Union Castle Steamship Co., Ltd., for three packages of gifts, and have pleasure in informing you that the latter arrived in splendid condition during active operations in South-West Africa; and, in consequence, owing to such articles being practically unobtainable there, were doubly appreciated by all members of the Corps.

"I regret that, owing to active Service conditions, our acknowledgment was not forwarded you earlier. Kindly convey to members of your committee the sincere thanks and gratitude of each member of the South African Aviation Corps for their kind thoughtfulness in including the name of this Corps on your committee's distribution list.

"(Signed) H. F. BATTEN, Capt.-Adjutant,
"for O.C. S.A. Aviation Corps."

AN ACKNOWLEDGMENT.

Muriel Viscountess Helmsley and Mrs. Rowton beg to acknowledge with thanks £4 17s. from employees of Vickers Limited, Weybridge, towards their fund for Prisoners of War in Germany.

Aircraft firms who would like to contribute to this deserving fund should send contributions to Lady Helmsley at 21, Upper Berkeley Street, W., and their contributions will be duly acknowledged in THE AEROPLANE.

Since the lines above were printed, a second £4 17s. has been received from the same source.

A SCOTTISH PATRIOT.

One of the first men in Scotland to give practical support to aviation was Mr. Geo. Wilson, of the Edinburgh "Evening News." He has done a good deal of flying on a six-cylinder Anzani Caudron, and when war broke out he offered his machine, with its hangar and all accessories, to the War Office. This generous offer was declined on the ground that the machine was "not suited for military work," although it had been specifically offered for the purpose of training aviators. The Admiralty also showed no desire to utilise it, and later on Mr. Wilson proposed to start a school himself, bearing all expenses for the first three months, but again he received no encouragement from the authorities.

The machine has now been bought by the London and Provincial School, and Mr. Warren was in Edinburgh last week, arranging for its transport to Hendon, so that after all it will play its part in helping the Flying Services.—D. W. T.

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A BUSINESS FIRM'S ACTIVITY.

When established business firms turn their attention to a new industry it is fairly useful proof that the said industry has taken a permanent place in the scheme of things. Before the war it was natural that a few far-seeing directors of armament firms should start their works making aeroplanes, but outside such firms the aircraft industry depended on the determination of a few pioneers who managed to secure a certain amount of financial backing, and on a few wealthy men who were enthusiastic enough about flying to start manufacturing aircraft with a sporting hope that some day their businesses would pay.

When war came and aircraft were badly needed numerous firms in widely different spheres of business took to making aircraft or parts of aircraft, as everyone knows, just as engineering firms of all kinds took to making ammunition for guns. Motor-car firms, ship-building firms, agricultural implement firms, cabinet-makers, furniture makers, cycle makers, and so forth, all began to take a hand, either turning out complete aeroplanes, or doing wood-work or metal-work for other firms who assembled their products into the finished article.

It may, however, be fairly assumed that those firms who came into the aircraft industry to make complete machines, and who laid down special plant and put up special buildings for aeroplane work have determined that they will remain in the new industry after the war, for it stands to reason that there will be a big market open to such makers as justify their existence by turning out sound stuff. Home orders are not likely to decrease, for even if pacifists try to cut down Government orders, there will be plenty of private and commercial business to do, and there will be foreign markets to supply as well.

Such, at any rate, is evidently the view held by the directors of Frederick Sage and Co., Ltd., a firm famous all over the world for the finest wood and metal work as applied to the fitting up of shops, and it is a view with which the writer cordially agrees.

The man who is capable of doing the high-class work needed in shop-fitting of the more expensive sort has to be a craftsman of considerable ability and not merely a wood-butcher, a plumber, or a tinker of the kind which has, unfortunately, drifted into some aeroplane works. Mr. G. A. Cowson, the General Manager of Fredk. Sage and Co., Ltd., seeing many months ago the possibilities of the aircraft industry, and seeking for the best way of using the many skilled craftsmen in his employ to the greatest possible advantage of the country, therefore proceeded to turn certain of the firm's workshops into aeroplane factories.

Some few days ago, the present writer had the privilege of seeing the progress made since Mr. Cowson's idea was put into practical form. In these days one must not, of course, specify the precise place where the work is being done, and any alien enemy having foul designs against the firm may take his choice as to whether the Sage aeroplanes are being made in the City of London, and managed from the Gray's Inn Road office, or whether they are being made at Peterborough, or any of the firm's numerous branch establishments. It will suffice to say that anyone who wants to communicate with the firm on business matters, whether it be another manufacturer wishing to sell raw material, or a disengaged aeroplane draughtsman or craftsman seeking employment, should communicate with the Gray's Inn Road office.

THE WORKS MANAGEMENT.

The works which the writer visited give proof of the energy with which Mr. Cowson has tackled his new job. It is not, of course, permissible to indicate the particular class of aircraft under construction, but one may perhaps say that they are none of the easiest to make, even for experienced aeroplane constructors, yet the work being

done is worthy of any of the oldest hands in the trade. This happy result has undoubtedly been largely brought about by the firm's wisdom in calling in the assistance of men who know how aeroplanes should be made.

The whole of the aircraft department is under the control of Mr. E. C. Gordon England, who, besides being one of our best fliers, is as sound a judge of design, material and workmanship as there is in this country, and, moreover, holds unusually enlightened views on organisation and works management. Another of the old hands of the trade is Mr. A. C. Leeper, formerly chief engineer to the late the Hon. C. S. Rolls, and one of the leading hands with the Short Bros. in their earliest days. Later, he managed the Mulliner aeroplane works, and afterwards was with the Sopwith Co. He has always been noted for his insistence on good quality of work, and the metal and wood work turned out under his supervision at Sage's show that he has lost none of his belief in workmanship. Associated with him is Mr. N. A. Fearey, one of the earliest experimenters with aeroplanes in this country, who spent all his private fortune on such work six years or so ago, and has, nevertheless, remained true to the aircraft industry ever since.

The firm is fortunate, also, in having had allotted to it Government inspectors who really know their jobs and take a pride in turning out work of high quality—and when one says turning it out, one means delivering the goods and not merely hanging up deliveries for finicky details which do not matter.

The works are pleasantly situated in a singularly healthy district, and the shops might have been built specially for aircraft work, being light and well ventilated, and yet not draughty. A new assembling shop of large size has recently been put up in record time, and as soon as the lighting and heating arrangements are in working order, it should be as pleasant a place for erectors and riggers to work in as they could wish.

The general management of the firm is on the best of terms with all its employes, who, by the nature of the fine work to which they have been trained, are workmen of the best type, and who, one gathers, realise that the work on which they are now engaged is of vital importance to the successful prosecution of the war, so altogether one is inclined to envy men who, in the natural expansion of the new departments, succeed in joining a firm where they can work under sympathetic management and under pleasant physical conditions.

The aircraft industry, as a whole, is to be congratulated on having received into its ranks a firm capable of doing, and determined to do, first-class work only, and one does not doubt that ere long Service pilots will feel, when they find that a machine bearing the Sage trade-mark has been allotted to them, that comforting faith in the quality of a machine which goes so far towards helping a pilot to do the best work in his own line of business.—C. G. G.

A FACTORY AT WORK AND PLAY.

Most people in the aircraft industry, and a good many hundreds of thousands outside it, are familiar with the name of Boulton and Paul, of Norwich. For some years past the firm has catered for the building of aeroplane sheds, and for a century or so before that the forerunners of the present heads of the firm built sheds and houses, and huts and kennels, for everything and everybody that needed a roof over it or them. Vehicle sheds, portable bungalows, frame houses, dog-boxes, chicken runs, aviaries, anything in the way of enclosures made of wood, metal, and wire, came within the firm's scope, and, in consequence, the people employed know just about what there is to be known about those materials.

It came, as a matter of course, then, that the firm should in due course take to building aeroplanes. When they began doing it is not for me to say, for the authorities

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might object, but I may say that one day last week I was invited to inspect the first aeroplane of a new type which the firm has built. The machine itself must not be described either, for it seems that our friends the enemy have a great affection for really reliable technical papers like *THE AEROPLANE*, which they obtain through neutral countries, so a description of this machine might easily give away valuable information concerning stratagems in store for German aviators.

It must, therefore, suffice to say that it is a fighting machine of considerable engine power, and of somewhat complicated design. Bearing the design in mind, it is very much to the credit of B. and P. that the first machine should have been finished last week when the drawings were only completed in June. Of course, one can build an aeroplane in six weeks, but there are cases on record when it took established aeroplane firms six months to turn out machines of no more complicated design than this. Also, be it said, the outside workmanship in this machine is excellent, and I have it on the authority of a highly experienced and reliable Government inspector—one for whose ability I have the greatest respect—that the inside workmanship is fully equal to that which meets the eye in the finished machine.

This is only the first of a baten of machines under construction, and others should follow it in rapid succession, so the three months have not been spent in building one aeroplane by any manner of means. On the whole, therefore, the firm may be congratulated on its smartness in doing so much in so short a time.

When one has had the opportunity of seeing the inner workings of the firm, as I had, one is by no means surprised. Like those of most big firms the works are variously situated, and, this being war time, I must not disclose where the aeroplanes are being made, for fear again of giving information to the enemy, or the Censor, but it is doubtless permissible to say that in Mr. Geoffrey fiske they have a works manager holding enlightened

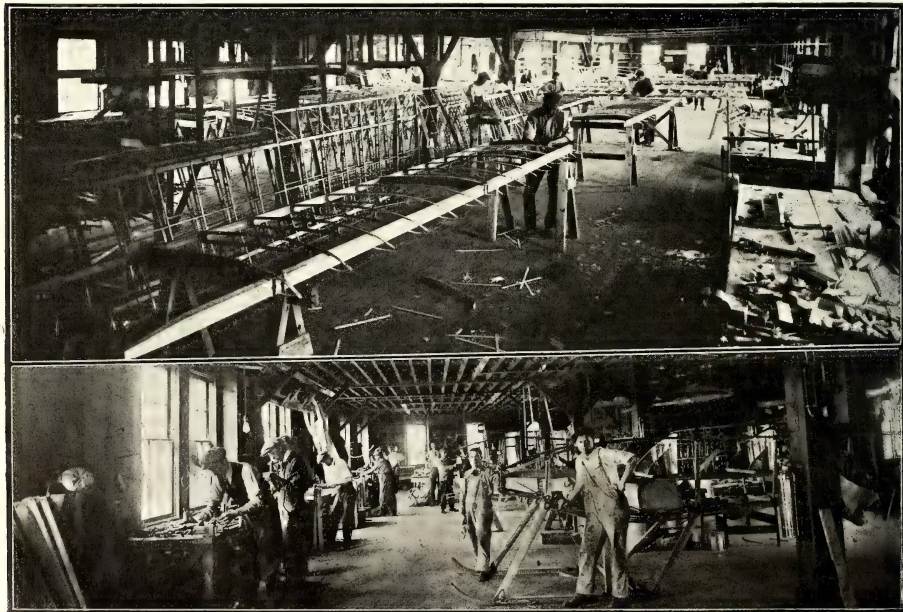
views such as would bring joy to the heart of "Anglo-American," for many of the ways of engaging and dealing with the hands approach closely to those expressed by him in his articles on "Efficiency in Production."

For one thing the firm has its own labour department under Mr. William Frater, who is this year's President of the London Association of Foremen Engineers. Mr. Frater is a Tynesider, and has the Northern engineer's shrewdness in judging and handling men; hence, one finds the right type of man at B. and P.'s, and the right class of work as a result. Mr. Robertson, the chief inspector of the work done, is a Scots engineer, with years of experience, so that there is a double guarantee that the work is of good quality.

My tour of the works was personally conducted by Messrs. Archer and Doe, whose keenness for the firm's reputation and general welfare showed how far good general management can help towards general efficiency and maximum output.

In honour of the first appearance of the new machine the employees and their relatives had been invited to inspect it at a not far distant aerodrome before it took the air for the first time, and the occasion was made a general holiday for all hands, who were transported to the aerodrome and entertained there at the firm's expense in a way which reminded me of my workshop experiences in years gone by, when employees took a personal pride in their firm's output, and when a word of disparagement by another man's employees was regarded as a *casus belli*. It was certainly encouraging to hear the cheer which went up from the crowd when the machine was brought out of its shed for inspection.

The afternoon was made still more interesting by some very pretty flying by R.F.C. officers stationed in the vicinity, who performed admirably on a varied assortment of machines, and showed that the younger generation of R.F.C. pilots is capable of upholding the Corps' high reputation. It was also gratifying to see the intelligent



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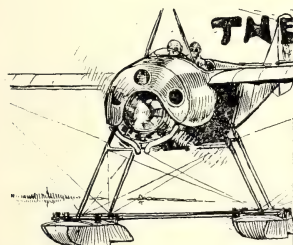
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attention the employees of B. and P. paid to the flying, for such an exhibition of piloting is bound to increase the interest the men take in their work.

Apropos the neighbouring military aerodrome, the B. and P. firm have good reason for pride in the work done here also, for the long range of stoutly built sheds is their product. Mr. Moore, who is concerned with this department, took over a bare grass field only two months ago, and to-day there are aeroplane sheds, vehicle sheds, officers' quarters, offices, and huts for the men, all ready for the winter, thoroughly well built and weather-proof. In view of Norfolk's reputation for healthiness, this aerodrome should be a regular health resort for the officers and men who have the luck to be stationed here.

Taking it all round the firm of Boulton and Paul may well be proud of the progress already made, and the spirit of loyalty displayed by all their employees connected with the aircraft department.—C. G. G.

A VISIT TO DALMUIR, N.B.

There is no busier place on the Clyde than the naval construction works of Wm. Beardmore & Co., Ltd. Tens of thousands of people are at work day and night, turning out in immense quantities all kinds of valuable munitions of war, and the privilege of a walk through the yards and workshops gives a highly interesting glimpse of the industrial part Great Britain is playing in the European conflict.

Not the least instructive department is that wherein for over a year aircraft have been building for the Services. On the water-side stands a large and extremely well-arranged building equipped with all that is necessary to turn out with speed and efficiency the various types of aircraft for which this great firm is now acquiring so high a reputation. At one end all the wood-working machinery is to be found. At the opposite end of the building stand all the metal-working machines and benches, and in the centre is space for the erection of the machines.

In separate departments, though under the same roof, are the doping, fabric-covering, propeller-making, and other rooms. One is particularly struck by the elaborate and ingenious ventilating instalment. Cool, fresh air is distributed throughout the building in warm weather, and warm air in cool weather. Special attention is, of course, paid to the doping-room, where the work is evidently carried out under most favourable conditions.

Standardisation of parts is thoroughly well organised. The advantages enjoyed by a firm with the immense resources of Beardmore's are obvious, for they have every kind of skilled mechanic and wood-worker in their employ, so that the whole of the manufacture of an aeroplane can be carried through without delay. In fact, every detail necessary, apart from the engine, is made in their own shops, and their boat-building department contributes some of the best seaplane floats ever sent on active service.

These floats had an exceptionally severe test recently. Mr. A. Dukinfield Jones, whose name is familiar to all who have followed the development of aviation from its early days, is responsible for the testing and delivering of the aircraft from the Dalmuir works. The seaplanes are on occasion towed on their floats, with wings folded, through the Forth and Clyde Canal to Grangemouth, and thence flown to their destination, if in Scotland. Mr. Jones started off with a mechanic on board as passenger, and had got as far as a point just off the coast at Crail, in Fife, when engine failure brought him down. A very heavy sea was running, the waves being so high that it seemed impossible to save the seaplane from an untimely end, to say nothing of its crew. However, after tremendous efforts, a steam trawler was able to get near enough to hitch a rope round, and the seaplane was rescued from wrecking itself on the rocks by a matter of seconds. It took six and a half hours

to tow it back to a convenient place in the Firth of Forth, though the distance was so short, and Mr. Jones and his passenger were in safe and comfortable quarters soon after ten at night, little the worse for a very trying experience.

In spite of the great strain which the floats had had to withstand, it was found that they were intact, and less than half an inch of water had found its way inside them.

There is a water frontage of a mile and a half at the Dalmuir works, and seaplanes are hoisted out of the factory on a crane straight into the water, without any need for slipways or rails of any kind. A few hundred yards away is a private aerodrome for testing aeroplanes, with a siding from the railway running into it. Every facility exists for the speedy carrying out of the contracts which, it is satisfactory to learn, are being steadily fulfilled in increasing quantities.

The aviation department is under the management of Mr. Hubbard, and he has every reason to be proud of the excellent workmanship and finish of the machines which have been turned out. Mr. Dukinfield Jones is, of course, a great asset to the company. His long practical experience as a pilot is backed up by an intimate knowledge of the technical side of the industry, and with enthusiasm and ability as a pilot he is decidedly the right man in the right place. Although not in the limelight, he has the satisfaction of knowing that he is doing valuable work for the country.—D. W. T.

ON TYRE TROUBLES.

There are very few things in this world upon which all men are agreed, but all will agree that there is nothing more objectionable than trouble in motor, motor-cycle, or aeroplane tyres. Despite various ingenious devices to eliminate punctures and bursts, one can never be sure of airtight tubes, and it is impossible to go on changing tyres after a certain point is passed.

Patching without a vulcaniser is always a difficult job, especially where large bursts are concerned, and the tyre user has waited for a long time for something really revolutionary to replace the good (or bad) old way of sticking on external patches which the compressed air inside the tube is working day and night to blow off. When, finally, the air obtains the mastery, there is usually a loud swish, occasionally emphasised by a smash.

The writer will remember till his dying day how he was once let down by the blowing-off of a six-months-old patch one Sabbath eve, when being so foolish as to be without lamps he had to blind 17 miles along unfrequented roads after lighting-up time, praying, the meantime, that the local constabulary were assisting to keep the home fires burning.

All this being so, the introduction of a really new system will be welcomed by every kind of pneumaticist, or whatever they choose to call themselves. This system has been evoked by Mustikon, Ltd., whose name implies the most striking attribute of the patent patches it produces. These patches are like nothing else in the world, except, perhaps, a rubber collar stud, or a double-headed mushroom. In fact, the patch is actually two patches joined by a rubber ligature.

The principle of the system lies in enlarging the rent to symmetrical proportions, inserting a patch through the hole exactly like a stud through a button-hole, with adequate solution, and finally pressing the patches home on either side of the hole. When this is done, the tube may be immediately replaced in the cover without waiting for it to dry.

The repairs thus made are absolutely impervious to air leakage, and the tyres thus mended should need as infrequent reinforcement as brand new tubes.

BY ERROR.

Owing to an error in transcription in the Triplex Safety Glass advertisement on September 22nd, the Type B goggles for aviators were illustrated instead of the cheaper Type A.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

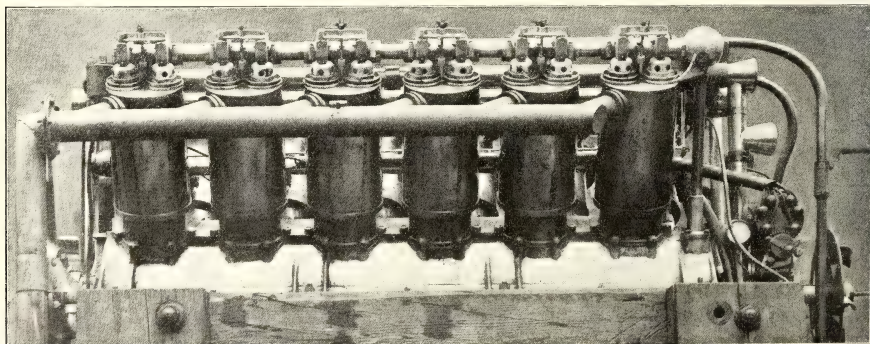
"If I can wheedle a knife or a needle, why not a silver churn?" hopefully sang the magnet-lover in the hardware shop, in the old years of high dogcarts and dress-improvers, before aeromotors or any other sort arrived to vex our souls. And even so to-day we have to deplore that element of unequal expansion and contraction which is the real secret of so many unhappy, because unequal, marriages—between metals. Priest them how you will with cunning corrugations, blacksmith weldings, or strange solderings of like to unlike with any sympathetic medium, the result is always a split—somewhere, some time. Such is always the case with the gay and yielding copper or the impudent brass, and the slow-heated dull cast iron or the stern-faced steel; all of whose qualities are so mutually attractive until brought into the antagonism of wedlock. True, there is that single and difficult amalgamation of electro-depositing, costly and eccentric as the may-as-well matrimony of St. James' Street and St. John's Wood. Wondering as much as we admire, we can imagine its fragility, but we don't know how long it will last. All we can do is to hope, like the old woman did with the parcel that proved to contain neither sugar nor tobacco.

Clearly, then, for workaday purposes, the best, if not only, chance of success lies in making the bond one of friendly freedom, for each of the contracting parties to live together yet work each its own way. Thus Mr. Green long ago discovered the truth and wisdom of the singer's famous advice with regard to rubber; the same universal medium of elastic irresponsibility. But in his combination of copper jacket and cast-iron cylinder, the pure rubber need not be used. In fact, it must not, as the heat generated sets up a certain degree of vulcanising. Nothing could be simpler than the mechanical method. Two light flanges are formed on the cylinder, so as to contain a stout rubber ring, which bulges out beyond the flanges a mere fraction of an inch. Then the mere pressing on of the jacket—which is spun to a jamming fit with the flanges—over the rubber ring brings it into such compression as to make an absolute water-seal. This, of course, leaves the copper jacket firmly secured above by the attaching open nuts over rubber washers in the same way—perfectly free to work according to its own heat-coefficient, independently of that of the cylinder. Of course, rubber is so nearly incompressible that even the thirty-second of an inch employed is practically the limit. Even so, after a while the rubber ring bulges out a belt-like ridge in the copper jacket, however thick the latter

may be; all of which goes to improve the seal, if possible, what with the accompanying vulcanisation. The rubber, indeed, is working under the best possible conditions—actually those in which it grows—warmth, darkness, and slight humidity, so it is no wonder that the ring will outlast the cylinder. In fact, they will show you such a ring which had been in use for four years in the motor of the old dirigible "Beta," yet was in better condition than a new one. In fact, this rubber water-seal is so much the soul of the Green aeromotor and its success, and in my opinion is capable of such wide application, so little confined to its monocylindric-mounting use as hitherto, that I hope to prove it as practically applicable to the monobloc jacketing of an entire group, while leaving such a jacketing as detachable, yet with as perfect a water-seal, as ever.

Such a device as this rubber water-seal would be quite enough to make the reputation of any motor to which it was applied. However, it is not the only "patent of distinction," so to say, included in the Green aeromotor, and probably the other of most practical value is comprised in the overhead cam-shaft and valve-gearing. This is mounted in a long oil-bath aluminium casing, which is formed in three lengths and set on one side of the central valve-line—for one reason, so that the stroke of the rockers contained in the extensions of the casing should be directly vertical to the valves; and for another, so that yokes, mounted on bolts set in the centre of the cylinder heads, should not only hold down the casing extensions, and with them the contained rockers to their work, but at the same time secure the valve-spring covers—domed nuts—and, through these, the valve-boxes directly beneath. Supported as it is, too, by as many as seven long bearings, the cam-shaft and, indeed, the whole construction, are proof against whip or displacement, especially since the vertical tubular casing containing the driving spindle—bevel-gearred above and worm-gearred below—also constitutes a rigid attachment to the motor base.

This, I think, is a fair description, if no very brilliant word-picture, of the Green valve-gear arrangement. But when you come to the purpose of this or any other overhead valve-gear, it is as well to consider what you intend by it, and whether, in carrying out that intention, you really achieve your object fully, or as fully as you might. The main object, of course, is to save weight; and since even the lightest tubular tappet-rods that could be made of any special metal are in fact eliminated, anything from four or five pounds upwards is usefully stripped out



The 12-cylinder 300 h.p. Green, in side view.

of the mass-weight at a stroke; less, however, the weight of the essential vertical driving shaft, its casing, and its gears, bevel, skew, or worm, as the case may be. The cam-shaft encasement, too, will hardly be heavier overhead than in the conventional situation at one side of the crank-chamber; and only very special design and construction can make much difference to the combined weight of rockers and valve-springs. The main point to watch, then, is that you do not put back all the weight again—as much as you had saved, and perhaps more—in the shape of yokes and anchorages of one sort and another. This may be so in the present instance, but I have never been positively assured of it; although it is evident enough that the employment of the exhaust-valve end of each yoke to take a quick-pitch lever screw for the purpose of a valve-lifter is a detail—almost an essential—that could not have been as conveniently carried out by any other means.

VALVE ACCESSIBILITY.

And then comes the question of valve-accessibility, which opens up many issues. It is very much a moot point whether an oil-bath shaft casing is so necessary as to make up for its encumbrance, or whether, indeed, since one fits rollers to the rocking levers in any case—for which a dressing of plumbago would suffice, and be far cleaner—a naked hollow shaft, fed with oil from one end and cross-pierced at its bearing centres, would not amply lubricate those bearings. If so—and I personally have no doubt of it—it is clear that the weight of the casing—appreciable even in aluminium—would be saved. Further, there is the question whether the failure of any valve and its replacement should necessarily throw the entire motor out of work. Afloat, at least, we think not. I remember, indeed, that Mr. Eric Clift designed not only the overhead valve-gear, but the whole working scheme of his marine motor especially—and most successfully—to prevent any

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KINDLY MENTION "THE AEROPLANE"

WHEN CORRESPONDING WITH ADVERTISERS.

such total stoppage. Aloft, then, I maintain that it should not be permitted; that, on the contrary, the whole scheme of any overhead valve-gear should be subordinated to this single object of non-interruption. The evident demand for exceedingly high-powered aeromotors, the very working conditions that call for such high power, point to no other conclusion than that, even if temporarily weakened, the running of the motor shall not be arrested wholly. Why should it, when its very size and power will probably require the services of an engineer as a special member of an aero crew, with no other duty?

AN ALTERNATIVE SCHEME.

But here we note the immediate result of setting the valves along the centre line of the motor, beneath an overhead cam-shaft; whether encased or naked, directly above, like the Maudslays, or at one side, as in this instance. Now, in the former example, it is clearly impossible to get at any valve without rocking the entire valve-gear away from all the others. In the Green design, however, this fatal limitation has just been avoided by making the rocker casting extensions as single pieces sleeved right and left over, and freely mounted upon, the main tubular cam-shaft encasement, so as to be rockable backwards as independent units as soon as the yokes are removed. In this way, then, one or both of any pair of valves can be got at, and another one substituted. But it will be obvious, nevertheless, that were the valves set transversely—a method which need not interfere in the least with the Green system of water-jacketing, though it might modify its upper moulding—it would be unnecessary to move even a central cam-shaft, encased or naked. S-yokes, carried on and secured from the actual vertical pieces supporting such a shaft, might then serve to secure the valve-boxes; and one may also suggest that the rockers might be pivoted in upward extensions of these boxes, with pivots of such a length that the rockers could instantly be slid aside out of engagement with the cams and valve stems. Again, an encased cam-shaft might even be laid closer down to the cylinder heads in such an arrangement, for the jumping pieces between cams and rocker ends could as well be made to work upwards instead of downwards, thus saving oil leakage and keeping the motor cleaner.

VALVE SAFETY.

All these variations from the special Green design, however, suggest themselves as illustrations of the possibilities of overhead valve-gearing practice; hitherto much neglected in all but a few Italian road-racing models, wholly so in aeromotor work; and therefore offering scope for useful adaptation. At the same time, there can be no question that transversing the valve-position as suggested would—as in the case of the Curtiss aeromotor—shorten almost to nothing the already fairly short exhaust and inlet passages of the Green, which, as it is, have to be played in diagonally, with no very clear advantage resulting. The ample head of water immediately around the valves nevertheless ensures efficient cooling; and a notable point about the combustion chamber design is that the slight enlargement of its diameter beyond that of the cylinder, so as to increase the available valve-areas, incidentally forms a slight ledge beneath each valve, so that, unless a valve-head breaks off short at the neck—almost an impossibility—a broken valve is caught before it can drop into the cylinder.

As I have already said, I consider that a motor already lofty-topped, such as the Green, would be all the better for having its cylinder-trunks dropped as far into the crank-chamber as possible. Made as they are, too, one could even show how they could be detachably fitted therein, and secured with the utmost rigidity and perfect alignment, without the use of a single bolt fastening. None the less, one cannot but admire the stiff and

staunch design of the crank-chamber, which is really a rather unusually strong box-girder frame than a crank-chamber in the ordinary sense, for the usual base-chamber is replaced by a light sheet-aluminium trough, semicircular in section, simply held up to the base-frame by three straps. Actually the upper box-girder—which really might as well be prolonged into a beam forward—besides having the usual buttress-flanges outside and a most substantial bottom flange, has five internal transverse webs. These, with the two end-plates, form the housing for the seven crank-shaft bearings, all of which are carried from the top by four out of the five bolts that secure the cylinders, the fifth being merely a stud set in a thickening at the top and at one side. This arrangement, while affording the cylinder-foot-flanges a symmetrical attachment at regular intervals all round, facilitates in a very happy fashion the slight off-setting of the crank-shaft to the exhaust side, which in turn gives plenty of space for a good-sized worm-wheel for the vertical drive of the valve-gearing, and for the following rather special arrangement. The worm-wheel is keyed on to the crank-shaft in an easy fit, and butts up against a shoulder on one side. On its other side it has a square groove, into which two half-rings of rectangular section are slipped. Just in front of this, the shaft is threaded to take a nut, the inner face of which caps the half-rings and prevents them slipping apart. Thus these two half-rings are enabled to take up all the thrust on the worm-wheel. Outside this one again is another worm-wheel, driving—through the usual worm—a transverse spindle coupled to the magneto at one end and to the valve-pump at the other. The vertical valve gear-driving shaft also has an extension below, which drives the oil-pump. This grouping of these two drives, with one worm transverse and the other vertical, is particularly simple and compact. But it needs just that space in the first instance which the off-setting of the crank-shaft helps to provide. It is a detail, of course, commonplace enough, but it shows most characteristically the studious correlation of every part of the Green motor, a quality none too common in conventional practice.

(To be continued.)

A KINDLY GIFT.

The Sunbeam Motor Car Co. has recently dispatched a number of gramophones to various Motor Ambulance sections at the front. The drivers have, at times, weary hours of waiting for instructions, and it was a kindly thought on the part of the Sunbeam Company to send these instruments to relieve the monotony. A letter has recently been received from a captain in one of the sections in which he says:—

"I wish to thank your company for their kindness in providing a gramophone for the drivers of my section of the 'Sunbeam' motor ambulances. I shall be delighted to receive your very welcome gift on behalf of my men. They have a hard, tiresome, dangerous duty to perform, and the gramophone will help them to pass the many weary hours they have to wait for orders.

"The drivers are loud in their praise of your Sunbeam cars. They never have trouble with them, and have many chances to compare other well-known makes of cars out here. The cars have fearful roads to face—roads corresponding to our unmetalled country ones at home, with large shell-holes added, and yet the cars give no trouble. They are so reliable in an emergency and run so smoothly. Many a wounded man has praised their comfortable journey down from the trenches—the cars being so well sprung.

"I can assure your company that the men will take care of the gramophone as they do your cars, which show the French, and the rest of the world who care to judge, the quality of your famous cars. They are the class of goods that one is proud to see the name 'British made' on."

SMART WORK.

The last time but one that I saw the works of Lang Propellers, Ltd., they were like "All Gaul," divided into three parts, most inconveniently, though perhaps not so much so for the inhabitants as modern Gaul divided between the French, the English, and the Germans. Anyhow, as a house divided against itself cannot stand, Mr. Lang determined to collect his three works from the Riverside (which was on occasion the river bottom), the Hillside, and the Townside, and concentrate them all under one roof just outside Weybridge and above flood-water level.

To this end he bought a cornfield, thus diminishing the food supply of the nation to increase its defences, and by cajolery, argumentery, financierery, and other efficacious means persuaded the local architect to design, the local builder to build, and, most wonderful of all, the local workmen to work, to such good purpose that in fourteen weeks the cornfield became a factory. Be it said it is one of the finest pieces of factory work that I have seen.

When I visited it last, one day early this week, the amount of work in hand was comfortably great, and its quality seemed better than ever, which is saying a quite good deal when talking of Lang craftsmanship. Numerous modern and novel machines have been set to work, but machinery has not meant decreasing the quality of hand work. Also, very great attention has been paid to the comfort of the workmen, for the shops are airy, well lighted, well warmed, and generally pleasing.

Perhaps the most remarkable feat in connection with the concentration of the works was the actual "moving." The three works closed on Thursday night. Mr. Lang and his personal staff worked all day Friday, all that night, all Saturday and Saturday night, and all Sunday, and on Monday at 6.30 a.m. the two hundred men then employed walked into the new shop, each man finding

his place marked for him in his new department, his tools in the place provided for them, and everything running as sweetly as if the place had been at work for months.

As one who has the greatest admiration for American factory system and method, I can pay Mr. Lang no greater compliment than to say that no American could beat the smartness with which he got his new works built and into running order.—C. G. G.

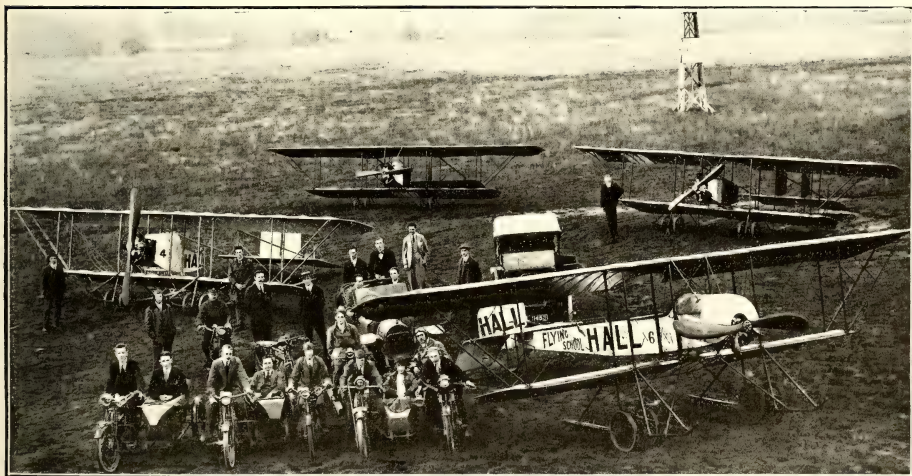
THE MANN BIPLANE.

On Saturday, Mr. A. E. Barrs, invalided out of the R.F.C., made his first flight on the Mann biplane with complete success, although the weather conditions were anything but pleasant.

On Sunday he was out again, making several ascents, including one of forty minutes' duration, and reaching a height of 5,000 feet with ease. The machine was going splendidly, and the speed indicator is said to have recorded up to 79 miles an hour—very good going with a passenger on board.

Unfortunately there was a mishap just before dark. Mr. Barrs made a perfectly good landing after taking another pilot for a trip, but before coming to a standstill the machine struck a rough piece of ground and made several small but graceful bounds. The last happened to be on a broad strip of soft clay, apparently covering a drain, and the weight of the machine forced one of the wheels so far into the heavy clay that the landing chassis, generally looked on as one of the strong points, gave way. One propeller struck the ground and dispersed itself for the benefit of souvenir hunters, and the passenger's nose came into contact with the wind-screen, but no other damage was done.

The accident was in no way the fault of either pilot or machine, but was obviously to be attributed to the "accidental" nature of the ground.—D. W. T.



The Hall Flying School and some of its pupils.



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A HAJJI AT HENDON.

On Sunday, October 3rd, Mirza Hajji Baba, the famous Persian traveller,* paid his first visit to Hendon, and he records the event in the report he was commanded to prepare for the Shah. Extracts read:—

When I entered London as the Shah's envoy so much wind had inflated my brain, and my nose was carried so high with the honour conferred upon me, that I was fully prepared to regard all the works of the infidels with the scorn that becomes a true believer who knows that nothing in the land of the Franks can compare with the beauty or the ingenuity of similar works in Persia.

On the third morning after our arrival in the capital, the first day on which we were not kept in the house by icy rain, a young infidel, a no-beard, entered our apartment, and with his head bared as a token of humility to my master, Mirza Firouz, announced that he was instructed to entertain us by conducting my master to see the wonders of his country. The Ambassador declared that he would not leave the house until the Frank astrologers should fix a fortunate day for his presentation at the foot of the Throne, but he gave me permission to accompany the guide so that our beloved King should be fully informed of such arts as these eaters of unclean things possess.

So I prepared for the journey, which I was assured it was necessary to take, and did not forget to place my pistols in my belt, my sword by my side, and my carbine at my back.

At the door stood one of the four-wheeled, no-horsed litters, which are used by the people of this country, which had glass windows all round such as were never seen in all the Shah's palaces.

The young infidel pushed me into the carriage and got in himself, and slammed the door and started off at a rate that almost took the breath from my body. For a few minutes my head turned round and round, and my brain was as water, but at last the young man managed to make me understand that we were travelling to a place where warriors flew.

At this remark I could but exclaim "Allah! there is but one Allah! I am in a state of amazement." I was not disposed to believe him, and thought he was merely employing an idiom to denote the equestrian exercises of horsed warriors who galloped like the wind.

We rushed through crowded streets, past thousands of no-horsed carriages, and, before I could say "Bismillah!" a score of times, we reached the open country, where I saw the first green grass since our arrival in London in the dark. But the beauty of the country was defiled by many huge infidel invocations, as I judged them to be, which were fixed up on frames by the way-side, the inscriptions being written in all the colours of the rainbow.

Suddenly my companion turned so quickly into a side lane that I was thrown violently on to the floor of the machine. The young infidel did not heed my condition, but drove faster and faster, and caused the carriage to make two different kinds of noises, one a toot-toot like a water carrier's horn, and the other a long roar. By the time I had regained my seat he stopped the machine so suddenly that I was thrown forward against the front glass, but by the goodness of God I did not break my head or the glass, which I was told had a magic name called Triplex. We had stopped outside a tall wall of iron, and the young man did many toots, whereupon two gates in the wall were opened by a fat keeper with no beard who was smoking tobacco in a paper tube or pipe.

As soon as we entered we alighted. Behind us were a number of wood and iron tents, in front of us, as I expected, a vast exercise ground for horses.

My mehmander, or guide, took me to a seat, and asked me to survey the prospect. Presently a young infidel approached us clad in the hide of the unclean animal, and I was informed that he was one of those who fly. I disbelieved my informant, because I could perceive no wings

upon his person. He offered me a paper pipe, which I waved aside, and remarked that it was a nice day, but, nevertheless, the sun was not like the sun of Persia.

There were a number of people walking and talking about, as if they had nothing better to do, and among them were many infidel women with bare faces, as happy and as unembarrassed as if they were within the sanctuary of their masters' harems. Occasionally we remarked women wearing a sort of apology for a veil, green, black or white, but it was merely a screen from the wind, dust and sun, but never was the impure eye of man considered.

Suddenly a herald, or master of ceremonies, appeared upon a kind of scaffold, dressed in the most splendid livery I had yet seen, and announced with the aid of the talking trumpet, such as we had seen at sea, that one called Mr. Manton was about to fly. Before saying more I must remark that later on my conductor presented me to most of these Franks of whom I write, and they gave me tickets with their names written upon them, so that the spelling thereof is in the correct Frankish manner.

My conductor hurried me down to the end of the ground, my heart fluttering with expectancy. Here we saw a kind of throne with a canopy over it, and divers rods extending from it apparently to ward off the Evil Eye. The young man in the unclean garments sat on the throne, and I was assured that he would now fly. I thought at first that he was merely a skilled leaper, and would perhaps jump the length of five men and pretend that that was flying, when suddenly an attendant touched a wooden scimitar which was appended to the throne, and as if by magic it turned into a thin mist, and we felt a prodigious wind emanating from the throne, and a terrifying roar.

I then perceived that my companion did not lie, and that the flying man was about to be blown into the air, just as our criminals are blown from the mouth of a mortar, although how he could fall without killing himself remained to be seen. I saw him make a gesture as if about to take the leap, when a number of very dirty attendants who had been lounging against the throne in a manner most disrespectful to so great a man, stood aside, and to my astonishment the whole contrivance commenced to rush along the ground like a house pursued by devils.

Suddenly it shot up into the air like one of the Shah's pigeons. I was so astounded that I could merely exclaim "La illah illallah! There is but one God!" though for the moment I was almost persuaded that there were two. While this geni flew round the neighbourhood in wide circles the young infidel endeavoured to explain the working of the flying throne. By special favour of the guards he led me to where another apparatus was being drawn from its iron tent like a sword from its sheath. He explained to me in his best Persian how a curious kind of iron star-fish dwelt behind the seat of the throne, which so far as I could understand had an unquenchable thirst for a kind of spirit, not unlike that with which the Franks make themselves drunk. This spirit is supplied to the star-fish from an urn in such a manner that if its seven mouths are to suck of the strong waters it must turn upon itself. The star-fish is so athirst that if it cannot suck 3,350 mouthfuls a minute it goes to sleep, and by the ingenious process of harnessing a windmill to it the infidels are able so to disturb the air that the machine cannot remain on the ground, and has perforce to fly.

He also said that the men who subjected themselves thus to flying were divided into tribes, such as the Grahame-White Tribe, the L. and P. Tribe, the Beatty Tribe, the Ruffy-Baumann Tribe, and the Hall Tribe, and many flying men from the different tribes displayed themselves. Their divers names were Russell, Winter, Moore, Hall, Stevens, Virgilio, Baumann, Roche-Kelly, Smiles, Barrs, and divers others whose name tickets I had not.

The different flying men were under the command of the master of ceremonies, and he seemed to give his orders in a voice of regret, doubtless thinking of the dangers of

the art. I could understand his anxiety, for every now and then a flying man would fail to sit down on the wheels of his throne and the contrivance would be dashed to pieces, but the young Frank invariably jumped out unhurt.

I noticed that most of the male congregation wore sombre clothes, as if their fathers were newly dead, but others who wore white head-dresses to denote that they were warriors, were beautified by certain gold fillets and brooches, and then I began to understand how gold is worshipped in this country where the unclean animal is held in honour, for those who wore no gold made obeisance with their fingers to those who wore gold, and a man who wore small gold ornaments made obeisance to those who were highly decorated. Certain of the warriors also wore talismans in the shape of ribbons of many colours over their hearts.

After we had viewed the flying infidels till I was weary my companion said that we would enter the caravanserai and eat. He led me to a gorgeous building, long and low, where there was a great display of looking glasses and silver, with bewitching hours to wait on our utmost requirements. A sumptuous meal of cakes, which to the eye appeared delicious, was placed before us—fit, indeed, for the Shah himself.

"Can this be a caravanserai," said I, "or is this a deception practised upon me?" The young infidel assured me that it was a place of public entertainment, but when I had eaten my fill I was brought a thing called a bill, in which every mouthful and every drop imbibed, together with a goblet I knocked over accidentally, were most carefully registered. My opinion of Frankish hospitality to the stranger was quickly turned inside out.

Soon after our repast the mehmander announced that he espied what he called a young flapper, or maiden, to whom he presented me. She was not the least embarrassed at accosting a stranger, and took my hand in the most bewitching way. My companion thereupon took me aside and announced how necessary it was for him to take the young woman back to her family as quickly as possible, and said that as there would be no room in the no-horsed carriage (although I counted six seats) he commended me to the care of a youth who was now approaching.

This youth, who wore glasses and seemed to have the most profound contempt for all things connected with the flying thrones, said that his vocation was to make histories about everything he did not understand and print them once a week in a book. He said that as soon as I was tired he would convey me back to the capital on his pillion, whereat I rejoiced, for I had not bestrode a horse since leaving Persia.

When, however, he led me to a machine with only two wheels, placed precariously behind one another, and said that I should travel with him on that, my liver was as water and my heart dwelt in my mouth. Still, there was nothing else to do unless I was prepared to walk alone through the crowded streets, so he set the apparatus in motion and bore me off in spite of my cries to be set down. How I reached the house which we called home, for want of a better one, I shall never know. I can only remember screaming all the way.

My heart is now filled with fear, for I am certain that when my master the Shah reads of all the wonders I have set down he will call me a liar, and the bastinado will be my portion if I do not lose my head. If it be so, Allah wills it!—W. L. W.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri	Sat.	Sun.
South Coast ...	Fine & Cold	Rainy	Dull & Cold	Dull & Cold	Fine	Rain	Fine but Dull
East Coast ...	Fine	Fine to Wet	Wet to Fine	Fine	Fine	Fine	Fine
London ...	Fair	Wet	Damp	Damp	Fine	Wet	Fine
Lake District ...	Gale	Windy	Fine & Windy	Windy	Fine	Misty	Perfect

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Instructors for the week: Messrs. Manton and Winter.

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Doing straights alone: Prob. Flt. Sub-Lieuts. Corry, Cross, Gammon, Man and Sadler.

Eights or circuits alone: Prob. Flt. Sub-Lieuts. Biscoe and Davies.

Machines in use: Grahame-White biplanes.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Rochekelly, R. W. Kenworthy, G. Virgilio and A. E. Mitchell.

Pupils with instructors on Beatty-Wright machines: Messrs. Arlon (75), Baldwin (10), Bond (15), Byrne (10), Calvert (10), T. Jones (15), Theo (15) and FitzHerbert (15).

On Caudron machines: Messrs. Baker (15), Begg (90), Bowick (40), Brown (24), Brynildsen (35), Campbell (14), Collett (12), Collier (50), Cowper (18), Cumming (60), Duffus (24), Fawcett (4), Gayner (32), Hodgson (50), L. F. Jones (35), Kirkwood (16), Lashmar (30), Mellings (18), Murdoch (30), Nash (12), Nicholson (18), Overton (30), Owen (10), Patterson (20), Podmore (10), Symington (10) and Tremlett (10).

Mr. Paul Arlon flew for his certificate on Friday, making exceptionally good volplane and landings.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday and Sunday and three passenger flights were taken.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with instructor: Messrs. Cuthbertson, Cole, de Grauw, Barnard and Harkness.

Pupils doing straights or rolling alone: Captain Crauford, Messrs. Ball, Griffith, Sherwood, May, Bailey, Liddell, Perrins, Brothero, Gallop, Johnston, Thomson and Stewart.

Pupil doing eights and circuits alone: Mr. Chambers.

Certificate was taken during the week by Pte. P. W. Chambers in excellent style, altitude and glide being exceptionally good.

Machines in use: Ruffy-Baumann Caudron type tractor biplanes.

There are now seven other pupils ready for their certificate tests.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irving and C. M. Jacques.

Pupils rolling alone: Messrs. Law, Little, Farrow, Northrop, Dawson, Roberts and Jowett. Straights: Messrs. Medaets, Knolles, Lochett and Lewis.

Eights or circuits alone: Messrs. Rochford, Dalrymple and Franklin.

Certificates have been taken this week by Mr. S. J. Woolley and Lieut. W. Baxter Ellis, who both made good, steady flights.

Machines in use: Three L. and P. tractor biplanes.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructor for the week: Mr. Russell.

Pupils with instructor on machine: Messrs. Ellis, Hughes, Mansel-Howe and Jones.

Doing straights and rolling alone: Mr. Ellis.

Figures of eight and circuits alone: M. De Meulemeister.

Machines in use: Grahame-White biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding, J. Lankester Parker and W. Laidler.

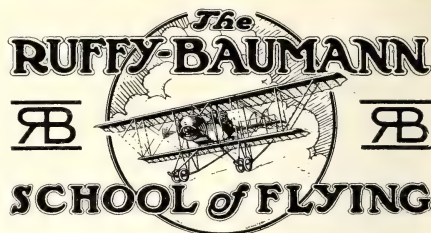
Pupils at work with instructor on machine: Messrs. Benson (29), Ingham (24), Inglis (26), Johnson (37), Linder (29), Macintyre (35), Shaw (30), Ridgway (10) and Yates (22).

With instructor as passenger: Messrs. Barber (26), Benson (16), Inglis (10), Johnson (10), Lawton (17), Macintyre (45), Part (30), Reid (8), Ridgway (30), Robertson (27), Robinson (25), Shaw (11), Yates (17), Reid (23) and Slingsby (82).

Mr. H. Slingsby passed tests, showing excellent control and judgment.

Machine in use: N.A.C. 80 Gnome propeller biplane.

This machine has been up over 2,000 feet several times this week with two up, a creditable performance for a seaplane. Several passengers carried, including Flt. Lieut. Ritchie.




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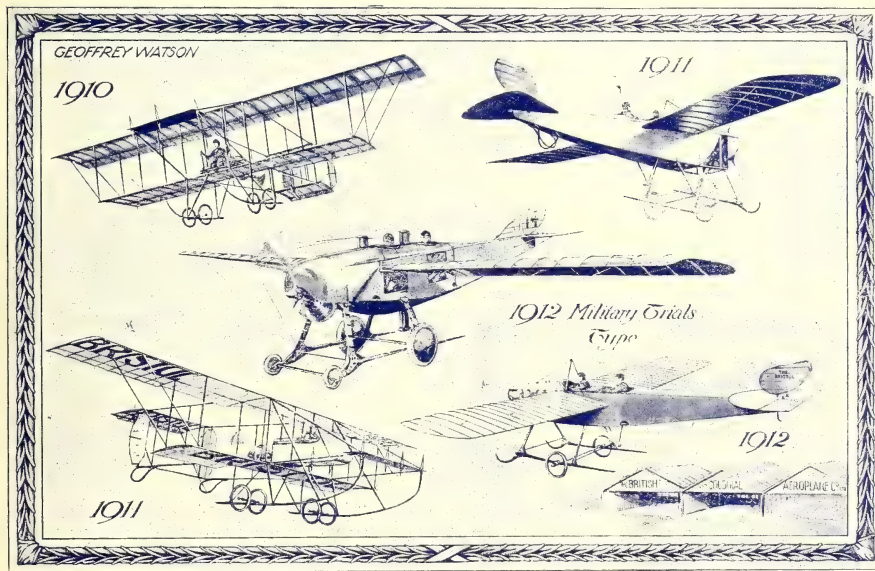
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Vol. IX. No. 15

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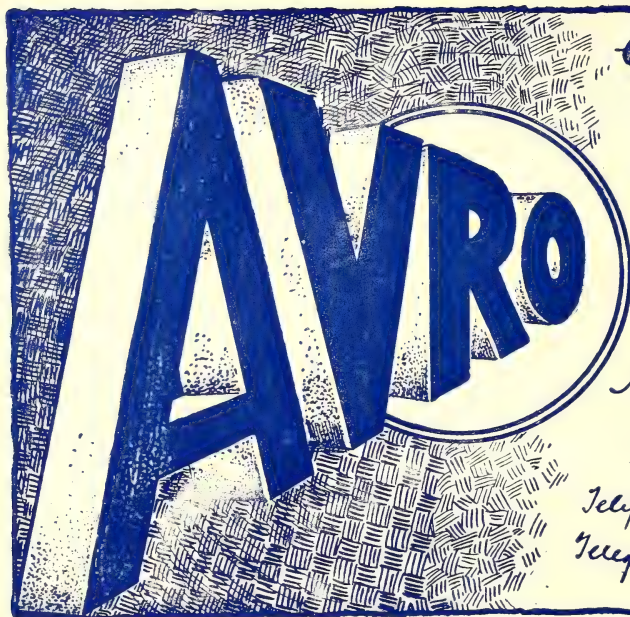
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ON OFFICIAL ECONOMY.

Having disposed of one or two little matters of topical interest, it is now possible to return to the subject of aircraft proper in connection with the article, already quoted on two occasions, by one "Ornis," which appeared in the "Times Engineering Supplement" some time ago.

Hereabouts it may be well to mention that "Ornis" of the "Times" is no relation to a certain young instructor in flying at one of the Hendon schools, who at one time wrote over that pseudonym in various South Coast papers. Which writer has claim to "prior user"—as the patent agents say—I do not profess to say, but "Ornis" of the "Times" is evidently either a person in Government employ, or is so closely in touch with those who run the Royal Aircraft Factory that, if not actually an employee of that establishment, he may be considered as being an honorary member of the staff. His inside information is so accurately inaccurate and his literary style so closely resembles that of a prominent official of the R.A.F. that one cannot believe him to be an independent and unbiased observer. Moreover, I cannot at the moment recollect his ever saying a good word for any individual make of British aeroplane, nor can I recollect any article of his in which he has omitted to advertise the high excellence of the R.A.F.'s products either by name or by implication—and he has generally done so by name.

Therefore, not only the good faith but the value of any opinion expressed by "Ornis" of the "Times" must naturally be suspect, from the point of view of anyone who has sufficient historical sense to know that only by open and fair competition is it possible to acquire the absolute best of anything in the shortest possible time.

STATE PRODUCTION.

State-encouraged competition is the best way to acquire the best, as the Germans showed us, and as this paper has preached for years. Cut-throat commercial competition is less desirable, but it does produce goods of fair quality quickly and cheaply. State monopoly, under existing social conditions, is the surest road to the death and damnation of quantity, quality, and price.

If you want proof of the fact, consider French matches and Russian vodka, the two worst and dearest things of their kind that ever existed. And if you want further proof of what State monopoly of aeroplanes would mean, go and ask anybody who knows the inside of the Royal Aircraft Factory what is being done there. As one man who had left in disgust wrote to me at the time: "They have got about — thousand men there. They might as well be interned for all the good they are doing, and they would be a heap cheaper in an internment camp." And you may find first-class workmen in almost any aircraft factory—really good men who know their jobs—who left the R.A.F. simply because their consciences reproached them for the way they were wasting their time.

It is not the fault of the men by any means. It is largely caused by foremen scheming for their own ends;

but it is chiefly caused by execrably bad works management and worse work-planning at the top. Even when a man works hard he can have no enthusiasm for his work, for he knows that not half the stuff made in the R.A.F. is ever used. For example, some youth in the drawing-office has a brain-wave and designs some new and intricate part for the Factory's latest attempt at a flying machine. Immediately men are set to work to make jigs or dies so that it can be manufactured in quantities. And when these expensive tools are all properly made, or are on the verge of being finished, it is suddenly discovered that the new part does not fit where it was intended to go, or that the machine does not fly, and so all the work is scrapped.

As an example of the kind of thing the drawing-office at the R.A.F. does, I may say that I have recently seen two drawings pertaining to one of the R.A.F.'s very latest machines, in one of which a riveting job is shown in which it is a mechanical impossibility to get at the rivets to hold them against the hammer, and in the other a piece of curved tube is shown fixed into an elaborately machined casting and so shaped that it could never be got into the holes in the said casting. Yet those castings would be made and machined in quantities before the mistake was discovered. Even that rare bird a workman who loves work for work's sake would get bored under such circumstances, and either throw up his job or turn into the usual chronic loafer of the R.A.F. shops.

The latter is the more probable result, unhappily, because if a conscientious workman wants to leave the R.A.F. in order to "do his bit" for the country elsewhere to the best of his ability the people in authority refuse to give him a clear discharge permitting him to enter other employment. The man's alternatives are either to stop at the R.A.F. or to throw up his job and loaf round with his hands in his pockets for the statutory six weeks before any other armament firm dare employ him. So that either way the R.A.F. system turns out loafers. All the same, there are plenty of garages and private workshops all over England, and especially in the London district, who are very short of men and who would be glad of the help of a good workman till the six weeks were up.

THE APPEAL TO ECONOMISE.

When one sees thousands upon thousands of pounds being pitched away every week by a Government establishment in this way, one realises the utter fatuity of Mr. Asquith's appeal to the nation to economise. Is any man who has drawn an extra five shillings overtime by lounging in a workshop doing nothing, just to please a foreman, such a fool as to think that he is a brilliant example of official economy? And is he likely to invest the five shillings in a War Loan Voucher to show his descendants what Daddy did in the Great War? My experience of my fellow-workman twenty years ago—and I do not suppose they have changed much since—leads me to believe that he would look on it as "found money" and the five shillings would go in beer or backing horses. And if there were six five-shilling

pieces 'found' in the same way during the week they would all go in the same direction.

When a man has to work, and work hard, for his money he values it all the more, and you will generally find that the man who is "close" with his money is the man who has had to work hard to get it. I have been through three "trade booms" in different trades, and history has repeated itself every time. Over-paid workmen have been wasteful with their money, and those who had the softest jobs were the most wasteful—always allowing for an exception here and there, who was a shrewd fellow and saved his easily got wages; but that man either became a foreman or section manager, or else—which often proved the most paying of all—he started a shop in which his wife did the selling and he looked after the buying and book-keeping. Thus he was able to prey upon his less acute fellows, and became in time a bloated capitalist himself. Some did almost equally well by "making a book" and inducing their fellow-workmen to back horses which, for all they ever showed in print, may be still finishing the races for which we backed them.

Thus, when one considers the economic side of the R.A.F.'s activities, one finds that they have a distinctly bad effect on the *moral* of the employees, as well as being wasteful of thousands of pounds' worth of good material, which, if handed over to any of various other firms who are crying out for raw material, would be made into useful munitions of war.

BURIED TREASURE.

Apropos waste at the R.A.F., I do not vouch for the entire truth of the following story, but it is so like what does occur at the R.A.F. that it is worth telling as an illustration of official notions of economy. A certain smart mechanic at the R.A.F. had a notion for certain improvements in propellers, and wanted an engine to test them. He asked for one, and was told that all the test engines were too busy to play with his invention. Thereupon he asked whether he might go and dig up "one of the buried engines."

When the somewhat astonished new official to whom the request was made asked what he meant, he expressed his surprise at the official's ignorance of the fact that various odd engines and parts had been buried out in the R.A.F. grounds to get rid of them. Apparently they were in the way in the stores, they were not wanted for experiments, it was not advisable to sell them—for then they might be useful to the mere "trade"—for some reason they were not offered to or not wanted by the R.F.C., and so they were just buried in a hole in the ground.

You see, one beauty of this scheme would be that if they were properly greased and wrapped up they would not come to much harm, and if no official inquiry was made about them for a year or so—and inquiry would be very unlikely, considering how R.A.F. records are kept—it would be quite safe for those who knew where they were buried to dig them up and take them home for their own benefit.

Apparently this man was in the know, so he got his experimental engine with the help of a common or garden spade.

As I have said, I do not vouch for the truth of all the details of the story, but I have the best of reasons

for believing that a good deal of really valuable material was buried in this way to get rid of it. Perhaps the Superintendent of the R.A.F. will investigate the subject a little more closely than it is possible for me to do, and, if my information is correct, he may find enough in a day to repay the nation the whole salary he draws in a year.

UNCONSCIOUS HUMOUR.

With these principles of economy before one, Mr. Asquith's advice to the nation is nearly as funny as the following passage on "inspection" from "Ornis" article:—

"As regards inspection of parts, once tolerances have been agreed upon and have been satisfactorily complied with, let there be no relaxation of them; in relaxation lie all the roots of bad performance in the finished craft and non-standardised production, with loss of interchangeability and cheapness."

For "Ornis," of all people, to talk of "tolerance" or "cheapness" is the essence of unconscious humour. Of course, he uses the word "tolerance" in its engineering sense, as indicating the limits allowed in gauging parts; but when one recollects the times before the establishment of the Aeronautical Inspection Department, when only R.A.F. inspectors existed, one remembers that wooden spars some inches deep were measured with micrometers and rejected because they were a thousandth of an inch under or over size. A tolerance of 1/1000 in. for wood is not practical engineering or even common sense, for wood in small sizes will vary a good many thousandths between morning and evening in unsettled weather. In this way hundreds of pounds' worth of good timber have been wasted which would have been highly valuable to-day. In fact, altogether the materials for several dozens of aeroplanes must have been scrapped through lack of reasonable tolerance. By all means refuse to relax tolerances, but let them be reasonable to start with, otherwise the worst sort of uneconomical production is caused—namely, that which uses expensive material in expensive ways and scraps it because someone who is ignorant of its purpose cannot make it pass a gauge which is unnecessarily close.

CHEAPNESS.

The use of the word "cheapness" in connection with anything designed at the R.A.F. would be mere impudence if it were not so funny. It would be almost impossible for any practical engineer to inspect any aeroplane part or fitting designed at the R.A.F. without seeing at once how the same job could be done equally well by a fitting which would cost less money and take less time to produce, and in many cases he would see how to get out a considerable amount of weight without reducing strength.

Thanks to the R.A.F. method of allowing youths in the drawing-office to design parts despite their utter ignorance of aeroplanes in practice, every R.A.F. aeroplane costs the country in hard cash just about twice as much to build as it should, and it takes about twice as long to build as it ought. Therefore, if the R.A.F. had been properly managed, the R.F.C. might by now have had twice as many aeroplanes for the same amount of money.

ON WHAT THE R.F.C. THINKS.

There is no doubt now that the Royal Flying Corps has been very badly let down by the Royal Aircraft Factory. I gather that the Chiefs of the R.F.C. are beginning to realise, after a year of war, the truth of what I have told them ever since this paper began, and of what I told them before that to the limits allowed

me by the proprietors of the defunct "Aero"—namely, that, owing to its composition, the Royal Aircraft Factory can never produce anything better than the despised "trade" can produce if it is properly encouraged to do so; that the R.A.F., so far from hastening progress in aircraft, is absolutely a barrier to the

production of the best possible machines and engines—because it will always use its personal and political “pull” to queer the pitch of anything which is better than its own products; and that the sooner its malign influence is removed and the sooner the Chiefs of Military Aeronautics take to direct consultation with the more intelligent men in the “trade,” the sooner they will get better aeroplanes than those of any other country. It has taken me five years already to get any sign of a move on the firm position of the R.A.F. in the favour of the Chiefs of the R.F.C., but I am beginning to have hopes.

I learn, with considerable interest, that the R.A.F. is now endearing itself to the motor trade in precisely the same way that it endeared itself to the aircraft industry in the past, by a display of patronising arrogance and appalling ignorance combined, which causes personal irritation to manufacturers and expensive inefficiency in their factories. But now, instead of a lot of poverty-stricken people struggling in aeroplane sheds, the R.A.F. is up against a powerful and wealthy industry with some approach to a trade organisation which can, if properly stirred up, pull strings as powerful as those which the R.A.F. can reach. Moreover, there are in the motor industry a good many people who know unpleasantly much about the past of some of the people at the R.A.F., and are consequently little inclined to bow down and worship them just because they are at present paid by Government cheques and not by windfalls from motor firms.

Incidentally, it may be some consolation to the motor industry to learn that the R.A.F. has to-day less to say concerning the R.F.C.'s engines than it has ever had in the course of its existence. The R.F.C. engines are, in fact, now in the very capable hands of an ex-Army officer who knows his job very thoroughly, both as a soldier and as a motor engineer.

Some people now in the R.F.C. are not too distantly related to the motor industry, and some even come from so lowly a source as the aircraft industry. Consequently, the R.F.C. of to-day is by no means so much

under the influence of the R.A.F. as it was in the early days when the charming manners, plausible arguments, and astonishing fluency of one or two officials were able to swamp the inarticulacy of the practical men who then composed the aircraft industry. In the bitter school of war the R.F.C. is learning more about practical aeronautics, and the R.A.F. seems to learn nothing much about common sense.

FROM THE R.F.C. POINT OF VIEW.

When the R.F.C. officer looks round and considers what the R.A.F. has done for him and what the “trade” has done he begins to think. He looks at his B.E.2c.'s, and his F.E.2b.'s, and his S.E.4's, and his R.E.5's, and compares what they have done on reconnaissance, in aerial scraps, and in bomb-dropping, with what has been done by Avro, Bristol, Martinsyde, and Vickers machines.

He wonders why firms which were without orders, or on the verge of closing down, not long before the war, have been the mainstay of the R.F.C., and why their machines are more numerous, as well as more effective, than all those which were ordered in thousands to the R.A.F. designs. He sees that the output of privately designed machines has been increased suddenly, while the output of officially designed machines is hung up by bad drawings, impossible designs, absurd specifications, and general lack of practical knowledge. When he gets the R.A.F. machines he finds that they are beaten on performance by one or other of the “trade” machines, and even by French machines which have been condemned by the French Army.

He sees the German aviators with powerfully engined and multiple-engined fighting aeroplanes. He thinks of General Henderson's and Colonel Sykes' prophecies of just such machines at Aeronautical Society meetings in 1913 and at the opening of an Aero Show six months or so before the war. He wonders why the R.A.F., with all its Government subsidy, has produced nothing of similar kind nearly two years after the Director of Military Aeronautics had publicly stated his needs.



Neutral Bay, Sydney Harbour, N.S.W., photographed by Miss Taylor, sister of “Captain Penfold,” the Australian aviator and aeronaut.

He remembers the R.A.F.'s strenuous, and all too successful, efforts to "crab" British engines, and to prevent French engines from being built in this country till its own "standard" designs were ready, and its protestations that no such designs were being thought of. He sees the R.A.F. engines coming out slowly, and hears of new privately designed engines which already beat them on power for weight.

And having reflected a little further on similar lines, the R.F.C. officer comes to the conclusion that the R.F.C. "sold itself a pup" years ago by backing the R.A.F. instead of the "trade," and he decides very definitely that the R.F.C. has been very badly let down by the R.A.F.

Just what some R.F.C. officers think of the R.A.F. was rather nicely illustrated a few weeks ago. A certain new type of machine built by a private firm had been on test at a certain Government aerodrome, and the Commanding Officer was so pleased with it that he could not resist the temptation to telephone the results of the tests to the R.A.F., just for the fun of telling them that with equal power the new machine beat the B.E.2c. for speed, climb, starting and stopping, and was just as stable and was more pleasant to handle.

This news so emotioned the staff of the R.A.F. that

an official, whom we may call Mr. Brown, ordered out a new and particularly nasty-looking R.A.F. product, in which the passenger occupies a position of some prominence, and bravely had himself flown over to the offending aerodrome, where he duly announced his important arrival. Judge, therefore, of his surprise when the C.O., via the Orderly Officer, intimated politely that he regretted that important affairs prevented him from seeing Mr. Brown that day, and that Mr. Brown need not wait to see him.

What the other officers heard afterwards was that the original message was to the effect that the C.O. hadn't invited Mr. Brown to come, that the C.O. didn't want to see Mr. Brown, that the C.O. wouldn't see Mr. Brown, and that Mr. Brown could damned well take himself off, and the sooner the better—which, of course, was carefully edited before delivery. Apparently what pleased the R.F.C. people much was that it rained heavily as the machine left on the return journey, and that the prominent Mr. Brown, "unlike Aaron," as one unregenerate person put it, was unable to part the waters as he went.

Which little narrative does not indicate that the R.A.F. is held in any high esteem by those nearly connected with it.—C. G. G.

THE R.N.A.S. COMFORTS FUND.

Now that the winter is approaching apace it is hoped that contributions to the good work of this fund will increase accordingly. It is, of course, no secret that the R.N.A.S. is now very much larger than it was a year ago and the money needed is correspondingly more.

The following contributions in cash are gratefully acknowledged:—

W. Bray, Esq., £5; British Linen Bank, £5; Civilian Staff, Kingsnorth Airship Station, 15s.; ditto, Drawing Office, 12s. 6d.; Mr. Eames, per Grahame-White Co., Ltd., 10s.; A. G. Harrison, Esq., 8s.

Amount previously acknowledged:—£1,022 13s. 7d.; total to date, £1,034 19s. 1d.

Out of this total, which has been subscribed between October, 1914, to October 4th, 1915, £953 2s. 10d. has actually been laid out by Mrs. Sueter on different comforts most desired by the men of the R.N.A. Service, leaving a balance in hand at bank of £81 16s. 3d.

Further contributions in cash should be sent at once to Mrs. Sueter, The Hove, Watlington, Oxon, and goods in kind to Mrs. Thompson, 10, Great Stanhope Street, W., or to Mrs. Sampson, the Grand Hotel, Trafalgar Square, S.W.

THAT INSTITUTE.

The following document has been received from the promoters of the self-styled "Aeronautical Institute":—

The Executive Committee of the recently formed Aeronautical Institute of Great Britain, whose main work during the war will be to speed up aircraft production, has now been formed, and consists of the following members:—

Mr. Charles Bright, F.R.S.E., M.I.C.E., M.I.E.E. (Consulting Engineer to the Commonwealth of Australia; Board of Trade Arbitrator, etc.).

Professor G. H. Bryan, Sc.D., F.R.S. (Professor of Pure and Applied Mathematics in the University College of North Wales; author of several important works on the Theory and the Stability of the Aeroplane; Member of the Government Advisory Committee for Aeronautics).

Sir George Greenhill, M.A., F.R.S. (formerly Professor of Mathematics in the Artillery College, Woolwich; author of mathematical investigations into aeronautical problems; Member of the Government Advisory Committee for Aeronautics).

Colonel F. N. Mande, C.B., late R.E. (author of a number of standard military works).

Mr. L. Blin Desbleds (Consulting Aeronautical Engineer; formerly of the "Forges et Fonderies" of Mauritius; Lecturer in Aeronautical Engineering, the Polytechnic, London; Special Lecturer at the Royal Military Academy, Woolwich, 1910; Examiner in Aeronautics for the Fellowship Examination of the Society of Engineers, etc.).

The above Executive Committee will be assisted by an Advisory Board covering the following fifteen departments:—(1) Aeronautical Science and Technics; (2) Inventions and New Applications; (3) Aeronautical Industry and Allied Industries; (4) Industrial Co-operation and Co-ordination; (5) Industrial Recruiting (male and female); (6) Industrial Education (specialised for war conditions); (7) Commercial Organisation; (8) Transport; (9) Finance and Banking Facilities; (10) Law (Industrial, Commercial, Patent, Parliamentary); (11) Municipal Relations; (12) Imperial Relations; (13) Foreign Relations; (14) Industrial Organisation, Development, and Inter-relations; (15) Publicity and Literature.

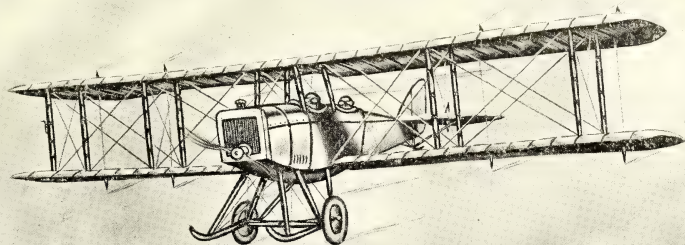
The temporary address of the Aeronautical Institute of Great Britain is 39, Victoria Street, Westminster.

[One much regrets to see the names of gentlemen who have had a distinguished academic career associated with this affair. Apparently none of them is sufficiently in touch with practical aviation to realise that he is merely being used as an advertisement. The mere grandiosity of the "Institute's" programme should warn any man of affairs that the whole thing is merely got up for the benefit of a few self-seekers. I suggest that the Royal Aero Club should obtain a definite dictum from the Admiralty and War Office as to whether this business has official approval, and should issue the result to the Press as a counter-blast to the "Institute's" advertisements. Presumably both the Admiralty and War Office know enough by now about the practical value of high-class scientists to give the whole thing a wide berth.—Ed.]

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The Trinidad Chamber of Commerce (Incorporated) of Port-of-Spain, Trinidad, British West Indies, has pledged itself to present at least one warplane to the British Government for active service.

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E.B.H. LANDER, 1915.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," October 5th, 1915.

WAR OFFICE, October 5th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Com.—Lieut. R. Loraine, S.R., from flying officer, and to be temp. capt. whilst so employed. September 15th.

Flying Officers.—September 11th: Temp. Lieut. G. H. Norman, R.A., and transd. to Gen. List; Temp. Lieut. R. S. Maxwell, Army Cycl. C., and transd. to Gen. List; Sec. Lieut. J. A. Crook, S.R. September 14th: Capt. R. G. Cherry, R.A.; Capt. S. Hutcheson, 3rd Brahmans, I.A.; Lieut. G. Wenden, Border, and seconded; Lieut. E. J. Strover, 3rd Brahmans, I.A.; Maj. T. C. R. Higgins, R. Lanc.; Sec. Lieut. H. F. Moore, W. Lancs. Div. Train, A.S.C., T.F.; Sec. Lieut. C. J. Temperley, N. Cycl. Batt., T.F.; Sec. Lieut. C. A. A. Hiatt, Norfolk, and seconded; Sec. Lieut. C. W. Snook, S.R.; Sec. Lieut. L. F. Hursthouse, S.R.; Lieut. S. T. L. Greer, R.F.A., T.F. September 15th. September 16th: Temp. Capt. J. H. S. Tyssen, N. Som. Yeo.; Sec. Lieut. H. I. F. Yates, S.R.; Sec. Lieut. R. Yates, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Lieut. A. B. Ford resigns comm. October 6th.

From the "London Gazette" Supplement, October 6th, 1915.

WAR OFFICE, October 6th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—September 18th: Sec. Lieut. C. T. Black, R. Warwicks, and seconded; Sec. Lieut. W. L. Robinson, Worcs., and seconded; Sec. Lieut. A. E. C. Archer, E. Kent, and seconded. Temp. Sec. Lieut. H. C. Wakefield, E. Surrey, and transd. to Gen. List; Sec. Lieut. A. G. L. J. Miller, I. Guards, and seconded; Temp. Sec. Lieut. C. S. Wynne-Eyton, R.A., and transd. to Gen. List. September 22nd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: S. A. Laird, H. Lee. To be Sec. Lieuts. (on prob.) L. C. Kidd (August 25th): E. A. Richards, J. P. Rowell (August 30th); G. D. Pidgeon (September 5th); P. P. Eckersley (September 20th); R. P. J. McCoy (September 23rd); N. Turner (September 27th); V. M. Wenner (September 28th), W. O. Russell (October 7th).

From the "London Gazette" Supplement, October 7th, 1915.

WAR OFFICE, October 7th.

REGULAR FORCES.—MEMORANDA.—Sergeants, 19th Alberta Dgns., to be temp. sec. lieuts. for duty with Royal Flying Corps. September 13th: F. C. Butler, H. C. Evans.

From the "London Gazette," October 8th, 1915.

WAR OFFICE, October 8th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Com.—Capt. W. F. MacNeece, R.W. Kent. September 9th.

Flying Officers to be Flight Coms. (and to be temp. capt. whilst so employed).—September 25th: Lieut. H. F. Glanville, W. India; Lieut. T. F. Rutledge, S.R. Lieut. M. G. Christie, S.R. September 26th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): T. W. Winter. August 31st. I. O. Griffith. September 5th. H. S. Ebben. September 13th.

From the "London Gazette" Supplement, October 9th, 1915.

WAR OFFICE, October 9th.

REGULAR FORCES.—ATTACHED TO HEADQUARTERS UNITS.—Depy. Asst. Dir. at War Office.—Maj. A. D. Car-

den, R.E., from sqdn. com., Royal Flying Corps, Military Wing. September 1st.

Staff Capt. August 1st: Lieut. (temp. Capt.) P. R. Grace, Royal Flying Corps, S.R., from an eqpmnt. officer; Lieut. A. G. Clark, Royal Flying Corps, S.R., from an asst. eqpmnt. officer. Maj. C. Mellor, R.E., from a flight com., Royal Flying Corps, Military Wing. September 1st.

Staff Lieuts.—Sec. Lieut. E. S. Skipper, Royal Flying Corps, S.R., from an asst. eqpmnt. officer. August 1st. Dated September 1st: Qmr. and Hon. Lieut. W. J. D. Pryce, Royal Flying Corps, Military Wing; Sec. Lieut. N. C. F. Francis, R.F.A., T.F.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Eqpmnt. Officer.—Sec. Lieut. H. E. Chaney, Lancs. F., from an asst. eqpmnt. officer, and to be temp. capt. whilst so employed. September 21st.

Asst. Eqpmnt. Officers.—Sec. Lieut. E. S. Skipper, S.R. June 12. Sec. Lieut. S. A. Laird, S.R. August 1st. Temp. Sec. Lieut. P. B. Hunter, A.S.C. September 17th. Temp. Capt. L. Sadler, A.S.C. September 25th. Temp. Lieut. G. I. N. Deane, R.E., T.F. September 27th.

* * *

From the "London Gazette" Supplement, October 11th, 1915.

WAR OFFICE, October 11th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—September 25th: Lieut. A. H. Jackson, Notts and Derbys, and seconded; Sec. Lieut. I. Kingdon, Worcs., and seconded; Sec. Lieut. R. Newman, S.R.; Sec. Lieut. A. S. C. MacLaren, K.O.S.B., S.R., and seconded; Sec. Lieut. E. H. P. Cave, A.S.C., and seconded.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. to be Lieuts.: C. C. Wigram, August 1st. September 1st: V. W. Eyre C. Defries. September 27th: E. I. Bingham, H. A. Oxenham.

To be Captain. September 1st: Lieut. (temp. Major) E. N. Fuller.

Lieuts. (temp. Capt.) to be Captains: T. O'B. Hubbard, C. H. Saunders, J. Valentine, P. R. Grace, A. Huggins, R. H. Collier, F. C. Jenkins, H. C. Barber, J. T. C. Moore-Brabazon, R. L. Charteris, M. B. Blake, C. G. Bell, D. S. Stodart, L. S. Melford, N. C. Spratt, V. A. Barrington-Kennett, C. C. Wigram, T. V. Smith, H. Blackburn, M. McB. Bell-Irving, R. Orme, B. C. Hucks, Hon. W. F. F. Sempill (Master of Sempill), G. B. Rickards, H. de Havilland, E. L. M. L. Gower, A. V. Bettington, G. C. R. Mundy, H. Burchall, R. Loraine, T. F. Rutledge, M. G. Christie.

Lieuts. to be Captains: G. N. Humphreys, J. R. Howlett, A. G. Weir, F. L. Scholte, F. S. Barnwell, W. H. T. Rampling-Rose.

NAVAL

The following appointment was notified at the Admiralty on October 5th:—

ROYAL NAVAL AIR SERVICE.—Flight Lieut. H. S. Adams granted the acting rank of flight com., and appointed to the "President," additional, for Central Flying School, to date October 4th.

* * *

The following was notified at the Admiralty on October 6th:—

ROYAL MARINES.—The temp. commission of Lieut. (Hon.) C. J. Murriff, R.M., is terminated on his appointment to the R.N.A.S., dated October 1st.

* * *

The following appointments were notified at the Admiralty on October 7th:—

ROYAL NAVAL AIR SERVICE.—Capt. (graded as Wing Com.) F. R. Scarlett graded as wing capt., to date October 4th.

ERNEST B. H. LENDER 1915.



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Mr. A. Raworth, entered as temp. lieutenant, R.N.V.R., and appointed to the "President II," additional, for inspectional duties, to date October 6th.

Major (motor machine-gun service) A. O. French-Brewster entered as acting flight lieutenant, and appointed to the "President," additional, for R.N.A.S., to date October 4th.

Mr. C. H. Nelson entered as temp. sub-lieutenant, R.N.V.R., and appointed to the "President II," additional, for wireless telegraphy duties, to date October 6th.

Mr. H. W. Evans entered as probationary flight lieutenant, for temp. service, and appointed to the "President," additional, to date October 6th.

* * *

The following appointment was notified at the Admiralty on October 8th :—

ROYAL NAVAL AIR SERVICE.—Sub-Lieutenant, R.N.V.R., B. Annoot, promoted to the rank of lieutenant temp., to date October 6th.

* * *

The following appointments were notified at the Admiralty on October 11th :—

ROYAL NAVAL AIR SERVICE.—Flight Com. H. A. Littleton, to the "President," additional, for duty at the Central Flying School, to date October 10th.

Temp. Lieutenant, R.N.V.R., J. H. Vickers, entered as probationary Flight Sub-Lieutenant for temp. service, to date October 1st.

The undermentioned have been entered as probationary Flight Sub-Lieutenants, to date as stated : J. A. Smith, October 10th ; G. A. Bittles, B. C. Tooke, and J. J. de la Tour Fox, to date October 17th.

* * *

The Secretary of the Admiralty announced the following casualty on October 6th :—

INJURED.

Probationary Flight Sub-Lieutenant. Howard C. Jevons, R.N. (October 4th).

* * *

The Secretary of the Admiralty announced the following casualty on October 10th :—

INJURED.

Reported under date October 9th : Probationary Flight Sub-Lieutenant. Arthur Handley, R.N.

* * *

The "Tyd" (Amsterdam, October 4th) states that five English aviators from Dunkirk dropped bombs on Zeebrugge at 6 a.m. on Sunday, October 3rd. German anti-aircraft guns shelled them heavily. One machine, flown by a naval officer named Boyd, had just dropped its last bomb when, at an altitude of 14,000 feet, shrapnel hit the motor. To save himself from falling into the hands of the Germans, the pilot made for Dutch territory and landed at Nieuwvliet (Zeeland).

The aeroplane was hit in five places. The pilot said that he thought another aeroplane was shot down. He will be interviewed.

[It is good news to hear that an R.N.A.S. machine which has been passed by the scientists at the Admiralty is capable of reaching a height of 14,000 feet. One only hopes that the altimeter had not a nought too many behind or a one too much in front.]

In view of the promptness with which the Admiralty announces casualties it is curious that Mr. Boyd has not been posted as missing.—Ed.]

* * *

The following has been communicated to the Press :—Mrs. Corkery, the mother of the late Lieutenant Warneford, V.C., has received from the King a letter stating :

"It is a matter of sincere regret to me that the death of Flight Sub-Lieutenant Reginald Alexander John Warneford deprived me of the pride of personally conferring upon him the Victoria Cross, the greatest of all naval distinctions.—GEORGE R.I."

[One gathers that this is the usual form of letter sent to the relatives of officers who have died before their honours have been conferred on them, but it is not usual to publish such letters.—Ed.]

* * *

The following appeared on October 9th :—

BARTLETT—EVANS.—On October 6th, by licence quietly owing to the war, at Willesden Parish Church, by the Vicar, Rev. James Dixon, Flight Sub-Lieutenant Malcolm Bartlett, R.N., third son of Mr. Edward Bartlett, of Connaught Square, Hyde Park, to Kathleen, only daughter of Mr. W. J. Evans, J.P., and Mrs. Evans, of Glencourt, Brondesbury Park. South African papers, please copy.

* * *

The following appeared on October 8th :—

MAUDE.—On the 6th inst., at 31, Cavendish Square, W., the wife of Flight Commander C. E. Maude, R.N., of a son.

[Congratulations !]

MILITARY

The following telegraphic dispatch, dated General Headquarters, 7.28 p.m., October 11th, was received from Field-Marshal Sir John French, and published on October 12th :—

Yesterday eleven fights in the air took place, in nine of which our aviators were successful. One hostile aeroplane was driven to the ground in the enemy's lines, and was almost certainly destroyed. This morning another enemy machine was brought down in our lines. We lost one aeroplane.

[It is well to compare this with the German communiqué of the same date.—Ed.]

* * *

The "Court Circular" dated from Buckingham Palace, Tuesday, October 5th, notifies that among the officers who had the honour of being received by the King that morning, when His Majesty invested them with the insignia of Companions of the Orders into which they had been admitted, was Capt. L. G. Hawker, Royal Flying Corps, who was invested with the Distinguished Service Order.

The "Court Circular" also says :—

"The King decorated the following with the Victoria Cross :—

Capt. L. G. Hawker, Royal Flying Corps : For most conspicuous bravery and very great ability on July 25th, 1915. When flying alone, he attacked three German aeroplanes in succession. The first managed eventually to escape, the second was driven to the ground damaged, and the third, which he attacked at a height of about 10,000 feet, was driven to earth in our lines, the pilot and observer being killed. The personal bravery shown by this officer was of the very highest order, as the enemy's aircraft were armed with machine guns, and all carried a passenger as well as the pilot.

[One gathers that this incident was the culmination of a number of gallant acts by this officer, who had previously fought a number of combats in the air, either alone, as in this case, or accompanied by a passenger handling a machine gun.—Ed.]

* * *

His Majesty the King has been graciously pleased to approve of the award of the Distinguished Conduct Medal to the undermentioned N.C.O.s for acts of gallantry and devotion to duty whilst serving with the Expeditionary Forces in France and Flanders and in Mesopotamia :—

448 Cpl. T. Bennett, Royal Flying Corps.

2 Staff Sergeant. C. V. Heath, Australian Flying Corps.

Corporal T. Bennett, R.F.C., was on patrol on September 13th, 1915, over Bois de Biez, with Second Lieutenant H. S. Shield, at an elevation of about 10,000 ft., when a German Albatross was sighted. The pilot dived towards it, and

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engaged it at about 7,000 ft. While diving they were subjected to heavy anti-aircraft gun-fire. The Germans used during the engagement a machine-gun very conveniently mounted, but Corporal Bennett handled his gun with great coolness and skill, and succeeded in disabling the German machine, which side-slipped, nose-dived, and came to ground in our lines.

Staff-Sergeant C. V. Heath, Australian Flying Corps, showed conspicuous pluck and determination in Mesopotamia on August 1st, 1915. He assisted to pole a "bellum" (flat-bottomed boat) 28 miles in 12 hours in most intense heat in order to rescue aviators who had been forced to descend in the enemy's country.

* * *

The following casualties in the Expeditionary Force were reported on October 6th, under date September 27th:—

MISSING.

James, Sec. Lieut. B. G., R.F.A., attd. R.F.C.

Yule, Sec. Lieut. L. W., R.F.C.

[Judging from the German communiqués of about September 27th, there is reason to believe that both officers are prisoners.]

* * *

The following correction in the casualty list was made on October 6th:—

CORRECTION.—MISSING.

Caws, Lieut. (not Sec. Lieut.) S. W., R.F.C.

* * *

The following casualties in the Expeditionary Force were reported on Oct. 7th, under date Sept. 27th:—

WOUNDED.

Mitchell, Lieut. E. H., R.F.C. and R.F.A.

MISSING.

Binney, Capt. F. B., R.F.C. and R.F.A.

* * *

The following casualty among the Indian Forces was reported on October 7th, without date:

THE PERSIAN GULF.

MISSING.

Fulton, Sec. Lieut. E. J., 1st Lancers, attd. R.F.C.

* * *

The following casualty in the Expeditionary Force was reported on October 9th, under date September 27th:—

MISSING.

Hellyer, Lieut. F. E., Hampshire Regt. and R.F.C.

* * *

The following casualty in the Expeditionary Force was reported from General Headquarters without date:—

MISSING.

Spratt, Capt. N. C., Royal Flying Corps.

[Capt. Norman Spratt is a South African, and will be remembered as a very fine pilot of the Deperdussin monoplane. As no date is given for his disappearance, it is impossible to judge from the German communiqués whether he is a prisoner or not. One hopes for the best.—Ed.]

* * *

Lieut. W. M. Wallace, 5th Battalion Rifle Brigade, attached R.F.C., who was posted as missing, is now reported through the Red Cross, Geneva, to have been killed near Sainghin, on August 22nd. Lieut. Wallace, at Edinburgh Academy and at Cambridge, was famous as a Rugby player, and played in the Scottish Fifteen in his first University season. Mr. Wallace joined the Rifle Brigade on the outbreak of war, and was at the battle of the Aisne, and later in the fighting round Armentieres. Afterwards, being attached to the Royal Flying Corps, he was in the actions at Neuve Chapelle and Festubert. He was the son of Mr. R. W. Wallace, of Halbeath, chairman of the Dunfermline District Committee of the Fife County Council, and a member of the Dunfermline School Board.

Lieut. Cyril Edward Felix Bevir, R.F.A., killed on September 29th, was the only son of Mr. and Mrs. Bevir, of Wellington College. Born in May, 1891, he was educated at Rugby and Pembroke College, Cambridge, and was gazetted to the Royal Artillery in July, 1912. He went out with the 6th Division in September, 1914, and after serving with the Royal Flying Corps as an observer he was appointed to X Battery, R.H.A. He was wounded at Zonnebeke in April, and went out again a month ago as adjutant to the 76th Brigade, R.F.A., Guards Division.

* * *

An officer in France, writing home, says:—

"First, as regards myself, or rather as regards the southern end of the British line in which I have the honour to burrow, German aeroplanes have a very thin time of it on our part of the line. One sees a dozen British for one German, and if one of theirs appears its life is either short or very harassed. Our anti-aircraft guns are decidedly better than the German's, and I have often seen their 'Archies' waste seventy or eighty shells in a few minutes, in clumps of four to six, without getting near our 'planes, whereas our guns have been decidedly successful.

"The cleverest scrap I have seen was on September 30th. A very fast German biplane was touring over our lines, with its attention engaged by the close practice of our guns, when suddenly from behind the clouds a British aeroplane appeared and bore down on the German, which fired 150 rounds, as we found out afterwards, from its machine gun, but in vain, and our machine opened fire and riddled the German, almost severing one of its planes and killing both pilot and observer.

"The aeroplane fell, both wings buckling, and came down within our lines after a drop of about 8,000 ft., though even in such a shattered state the comparative slowness of its fall was noticeable. One wing was a long distance from the machine, and the bodies of those inside were unrecognisable, one being buried beneath the machine. One was glad that they had been killed by the bullets, especially as Hun aviators are generally good sportsmen.

"The machine was regarded as a great prize, as it was of some wonderful new type, very fast and developing great horse-power. I gathered that its engines were a matter of great interest to our scientific experts. It was also an Iron Cross machine. There was a great rush for souvenirs, and some of our blithe Tommies were collared in the act of carrying off a machine gun as a souvenir!

"Our pilots out here have not got a great opinion of the skill or courage of the German pilots, who never attack them unless about three to one. One pilot described to me how he went a 50-mile trip into German territory and his machine gun jammed at the start, and yet a big fast German machine followed him round at a safe distance, never interfering and sheering off if he fired at it with his pistol.

"The R.F.C. undoubtedly did great work before the big offensive, destroying all communications, and in some cases coming down to 300 feet to drop their bombs, but all agree that the Germans are wonderfully quick in repairing damage, for our men may drop bombs on a train, wrecking train and permanent way completely in the morning, and in the afternoon the trains are running as usual over that part of the line.

"I understand that the record for bullet-holes, a much prized record, is held by a Captain L., who returned from one flight recently with over 300 holes, the previous record being 240 odd.

"The French pilots are of two sorts—those who dive to 300-500 feet and drop their bombs with beautiful precision, and those who stay at 9,000 feet, drop their bombs, and trust to luck.

"I see that at the start of this letter I spoke of a few lines. Heaven preserve you when I write a good many!! Life out here is a damned good mixture of a picnic and a gamble—at roulette, as you always lose in the end."

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An artillery officer, in a letter describing a scrap in the air in which the German machine was defeated, says:—

"The troops round here all cheered our machine like mad—not that he could hear them. The two men are absolute devils for this sort of thing, and have brought down several machines lately, although this is the first to fall in our lines. Altogether it was a magnificent sight, although one couldn't help feeling a little sorry for the Huns, but as one of our telephonists said, 'I dunno, sir—he shouldn't try to come and play in our backyard.' I rode over afterwards to the wreck—only about $1\frac{1}{2}$ mile as the crow flies from here. The wreckage was simply awful; you could never have imagined it had been an aeroplane."

The "City Press" says:—

The son of a well-known Guildhall officer witnessed "the great advance" as a member of the Royal Flying Corps. He started flying at 5.30; came down for breakfast; returned to his post until lunch; and then, to use his own words, "they wouldn't let me fly again." He therefore volunteered to go with his observer to "a rather nasty place" in order to give the range to some quick-fire guns. There he remained for an hour and a half, during the whole of which time he and the others were the continuous mark of the Huns above and on terra firma. Eventually his speed indicator was smashed, and he himself hit slightly. The major characterised the day's work as "a damned fine show," adding that the flying man had "done enough for the day." And we agree with him!

[Though the son will probably strafe the "Guildhall officer"—whatever that may be—for publishing the extracts quoted, he deserves thanks for a very terse description of an R.F.C. day's work.—Ed.]

The following appeared in the daily papers on October 6th:—

PADLEY.—September 29th, 1915, at Silverdale Nursing Home, Sydenham, S.E., the wife of Horace George Padley, Lincolnshire Regiment and Royal Flying Corps, of a daughter.

FRANCE.

The communiqué of October 5th says:—

One of our aeroplane squadrons dropped about 50 bombs on the railway station of Biaches near Peronne.

[Biaches is on the west bank of the Somme, opposite Peronne, and the station is about a mile from the village. The German communiqué states that aviators threw bombs on Biache Saint Vaast, which is on the railway between Arras and Douai. Possibly the French bombarded both places.—Ed.]

The communiqué of October 6th says:—

One of our aviators in Champagne this afternoon fired on a German captive balloon, which fell in flames in the enemy's lines.

The following French official communication was published in London on October 9th:—

The German communiqué of the 6th of October replies to the English allegations which claim for the Allied aviators superiority in aerial warfare.

The proof that this superiority belongs to the German aviators is found by the Berlin communiqué in the fact that in September the Germans only lost seven machines, while the English lost eight and the French twenty-two. These totals are open to dispute. The figure which concerns us exceeds by more than one-third our true losses.

As to the German aeroplanes during the course of last

month we have seen more than seven fall, some in their own lines and some in ours, in an obviously helpless condition; but even that is only one side of the question.

A comparison of the losses suffered does not permit of any serious conclusion if it is not accompanied or corrected by a comparison with the amount of work accomplished and with the results attained. Our scouting squadrons are active and daring, our chaser-aeroplanes are always ready and thirsting for battle. The German aviators, on the contrary, manifest on every occasion a discretion which is imposed upon them by strict injunction. One can judge of this fact by the following order emanating from the Headquarters of the 8th Reserve Corps, No. 19635, of 28th of August:—

"These battle aeroplanes should only take the air to fight the aeroplanes which have crossed the French lines. They are ordered not to cross the lines themselves under any pretext."

The terms of this order tend to show perhaps: (1) That the German aviators have in the past suffered substantial losses; (2) that the High Command does not care to expose them to losses still more substantial. But it is difficult to find here a proof that the mastery of the air belongs to the Germans.

[This is a very clear and sensible statement, and should be compared with the German statement of October 6th—which appears in its proper place in this issue. One may, however, add that the real reason for the German "battle-planes" not crossing the Allies' lines is that they are intended to drive the Allies' aircraft away from their own territory, and are sufficiently armed to do it, but if they entered the Allies' territory they would be exposed to the fire of anti-aircraft guns, which they could not, naturally, withstand.

If they were shot down under such circumstances they would fall into the hands of the Allies and so would give away points of design and construction, which it is desirable to conceal, and which the Allies would doubtless be glad to learn—judging by the admiration with which some of the German "battle-planes" are regarded by our aviators. Therefore one may see in this order merely another example of that forethought and thoroughness which has enabled German troops to effect so much against the considerable superiority in men and money of the Allies.—Ed.]

The communiqué of October 10th says:—

A German aeroplane brought down by one of ours fell in our lines in the Forest of Puvénelle to the south of Pont à Mousson. Both of its aviators were killed.

One of our air squadrons this afternoon dropped about a hundred large shells on the stations of the rear front of Champagne, and on the enemy troops which were seen assembled there.

It was reported from Paris on October 8th that M. Besnard, Under Secretary of Military Aeronautics, had returned from London, "where he settled in the most perfect agreement with the British Government various questions relating to the aeronautic service."

[It is not generally believed in Flying Service circles that M. Besnard came to London to study and learn from the arrangements made for the defence of London against aerial attack.—Ed.]

The "Court Circular" issued from Buckingham Palace on October 6th notes that the King received the following member of the "Commission Internationale de Ravitaillement" that afternoon:—

Capitaine Plaisant, Capitaine du Génie (Head of Special Mission: Aviation and Engineering) of the French Ministry of War.

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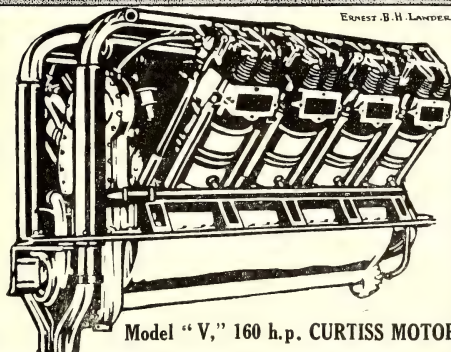
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It was reported from Paris that on the morning of October 11th an aeroplane fell in the Boulevard Delesart, near the Trocadero. The two aviators were severely injured, which seems to show that the patrol over Paris is not without its disadvantages.

A later report says :—

Lieut. Fourcade was piloting the machine, and he had with him Sergeant Clerly. The aeroplane was obliged to descend owing to engine trouble while flying over Paris, and as no open space could be found, a forced descent was made in the boulevard. Passers-by hurried to assist, but Lieut. Fourcade died almost immediately and Sergt. Clerly expired in hospital.

GERMANY.

The communiqué of October 5th says :—

An enemy aviator threw bombs on Blache Saint Vaast, north-east of Arras, killing one inhabitant, but otherwise doing no damage.

The communiqué of October 6th says :—

An English report of October 1st claims that the English have got the better of our aviators in aerial fighting. The following summary gives the best explanation :

In September we lost three machines in aerial fighting, two are missing, and two were shot down from the earth—total, seven aeroplanes. In September our enemies lost in aerial combats, the English four machines and the French eleven : by rifle and gun fire from the earth, English one, French four : by forced landing behind our lines, English three, French seven—totals, English eight, French twenty-two, or thirty machines altogether.

[This is an exceedingly interesting statement and may be perfectly correct although suggesting a falsehood. It should be compared with the French statement on this subject, which appeared on October 9th. The allegation that eight British machines have been lost seems as nearly correct as our somewhat confused system of reporting casualties permits one to calculate. Mr. Prevost Battersby reported that only one British machine had been defeated during the week prior to September 26th, which may also have been correct. Nevertheless, three other British machines posted as "missing" in the Casualty List may have been brought down by the superior speed, climb and armament of German "battle-aeroplanes" without our people knowing anything about their having had a fight in the air, and possibly those three missing machines may not have been included at all in the 84 aerial combats reported in last week's AEROPLANE.

Admitting that to be true it does not in any way disprove our claim that in 84 such aerial combats one British machine was defeated, and that in the remaining 83 combats the German aviators either were beaten or refused to

fight. Suppose that in 87 fights the Germans brought down 4 British machines, thanks to superior equipment, and that the British brought down 3 Germans and chased 80 away, it still looks as if we had got the better of it.

As regards the figures for the French losses. Errors may easily occur through a brigade or division commander reporting an aeroplane as having been brought down by the fire of his anti-aircraft guns, and a flying officer reporting that he has brought down the same machine. G.H.Q. may then in perfect good faith count the machine as two. In one or two cases it has been very difficult to find out whether one or two have in fact been brought down.—Ed.]

* * *

The communiqué of October 11th says :—

Our aviators brought down four enemy aeroplanes. A British aeroplane fell east of Poperinghe. North-west of Lille Lieut. Immelmann forced a British two-decker to land from a height of four thousand mètres. This officer thus in a short time obliged four enemy aviators to land.

In Champagne, near Somme-Py and also on the heights of the Meuse, west of Hattonchâtel, a French two-decker was shot down in an air battle. We lost one observation aeroplane south of Bois-le-Prêtre.

[This, it will be observed, agrees with Sir John French's report, as the machine "forced to land" presumably came down in British territory, and was not lost.—Ed.]

* * *

Apocryphal the loss of the French airship "Alsace," the special correspondent of the "Cologne Gazette" says :—"Three members of the crew first sprang from the sinking vessel; one of these came to grief, while the other two were taken prisoners. The abandoned airship drifted on to a wood near Tagnon, between Reims and Rethel."

The "Frankfurter Zeitung" expresses relief that the Champagne Army has been delivered from the "persistent attentions of this ghostly nuisance," so evidently the "Alsace" had done good work.

RUSSIA.

The communiqué of October 9th says :—

Our aeroplanes made a raid on the station of Czernowitz and dropped several bombs on trains and munition depots. A column of smoke and flame appeared immediately over the station.

An enemy aeroplane rose from the Czernowitz station to engage our aviators, but quickly descended when fired at by our aviators.

* * *

The communiqué of October 11th says :—

A German aeroplane threw some bombs on the railway station of Nitzhal, north of Dwinsk.

South-west of Dwinsk our artillery brought down a German aeroplane, which fell in the enemy lines.



The Aviatik School at Mülhausen-Habsheim before the war. This shows the modern types of machines used and the extensive scale on which German schools were run.

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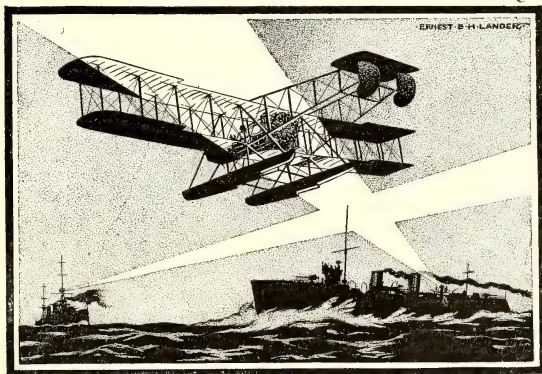


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ITALY.

The communiqué of October 8th says:—

Austrian aviators dropped some bombs upon the Rocchette, in the Astico Valley, without doing damage, and on the station of Cervignagno, where five soldiers were slightly wounded.

The communiqué of October 9th says:—

A flotilla of fourteen of our aeroplanes yesterday dropped bombs on the headquarters of one of the Austrian high commands at Kostanjevica, on enemy encampments at Oppachiasella, and on the railway station at Nabresina. Notwithstanding the fire of numerous enemy anti-aircraft guns our aeroplanes returned undamaged to our lines.

An Austrian aeroplane dropped darts on one of our encampments, and a bomb on Cormons without doing any damage.

BELGIUM.

It was reported from Amsterdam on October 10th that the previous night four British aviators made a raid over Ghent and the vicinity, dropping bombs. The German anti-aircraft guns fired at them, but apparently without result.

Later it was reported that another air raid was made over Ghent on the morning of the 10th.

The 'Echo Belge,' Amsterdam, October 12th, learns that the raid by Allied aviators on Ghent and Gontrode last Friday was extremely successful. The squadron made direct for the sheds in the German aerodrome, on which they rained bombs until not one shed was left standing, and all with their contents were burnt out. About ten houses were also set on fire by bombs.

SERVIA.

The communiqué from Nish, dated October 6th, says:—

On October 4th twenty aeroplanes flew over the district of Lower Morava and Mlava, dropping 30 bombs on Pozarevac and three bombs on Gorica. There were no casualties.

An enemy aeroplane of the Taube pattern, coming from the direction of Zajcar and Kragujevac, flew over Nish, and then, flying east, left for Bulgaria.

The Morava and Mlava Rivers enter the Danube east of Semendria, Pozarevac and Gorica, being about 15 miles from that town. Zajcar is a fortress close to the Bulgarian frontier, 45 miles north-east of Nish and Kragujevac is 70 miles west of Zajcar, and 60 miles south of Belgrade.

DENMARK.

It was reported from Copenhagen on October 11th that a number of Danish ships have lately been stopped and searched by aircraft. The Government therefore is ordering all Danish vessels to paint the national colours on the roofs of deckhouses so as to be plainly visible from above.

SOUTH AFRICA.

The "Cape Times," in making some comments on the work of the South African Aviation Corps in the recent G.S.W.A. campaign, gives some interesting information supplied by Mr. J. Hodgson Hartley, J.P., Hon. Secy., Aero Society of South Africa:—

Many and varied rumours were afloat as to the whereabouts of this corps, and as far back as November, 1914, rumours were circulating in this country to the effect that "fifteen aeroplanes with a large body of naval gunners from Gibraltar" had landed at Walfish Bay. As a matter of fact, no aeroplanes were landed in German South-West until May 1st, 1915. The total number landed at Walfish Bay was eight, consisting of two B.E.2c's fitted with 70 h.p. Renault engines and six Henri Farman "War 'busses" equipped with 140 h.p. Canton-Unné engines. These types all worked satisfactorily, but there

is no doubt that the Farman 140 h.p. is the most suitable, especially in the higher altitudes. The climb is very good on the latter machine, as is evidenced by the No. 6 H.F. rising to a height of 12,500 feet on June 6th.

The personnel of the South African Aviation Corps was composed of 137 officers and men, under the command of Major Wallace, the officers being Capt. Turner, Capt. Batten (adjutant), Capt. Van der Spuy, Capt. Creed, Capt. Powell, M.D. (medical officer), Lieuts. Emmett, Earle, Carey-Thomas, Hewett, John, Weston, Clisdal, Driver, Sub-Lieuts. Cripps, Hinshelwood, and Wood, the latter three being temporarily detached from the Royal Naval Air Service.

The first batch of the South African members landed in Walfish Bay on March 20th, and the Overseas Contingent landed on April 8th.

The following sections were formed:—Stores section, under Lieut. Emmett and Q.M.-Sergt. McAllan; erection department, under Capt. Creed, with Sergt.-Major Creed as chief mechanic; flight section was under Capt. Turner, Lieut. Van der Spuy, Lieut. Cripps, and Flight-Sergt. Buck; engine section, under Lieut. Hewett and Sergt. Williams; transport department was controlled by Lieut. John and Staff-Sergt. Duncan.

Great praise is due to the commanding officer, Major Wallace, and to his popular adjutant, Capt. Batten, for the tact and wisdom with which they inaugurated and carried out the duties involved in this the first campaign allotted to the South African Aviation Corps.

On May 1st two Henri Farman biplanes arrived at Walfish Bay, the first of the consignment. Unfortunately, they were found to be damaged, but soon mechanics of all kinds were at work, and within a few days the machines were ready for the test.

The first aeroplane, a B.E.2c, left the hangar on Tuesday, May 4th. Lieut. Van der Spuy had the historical honour of being the pilot to command the first Government aeroplane ever flown in South Africa. On the following day the camp was honoured by a visit from General Smuts, who witnessed a number of trial flights along the coast belt. The first real flight, however, took place on Thursday, May 6th, when Lieut. Carey-Thomas, accompanied by Lieut. Clisdal, left Walfish for Garub, via Swakopmund. The erection of beacons as far as the latter place was in charge of Lieut. John Weston and Sergt. Williams. On May 8th the two B.E.2c aeroplanes also left for Garub, one in charge of Capt. Turner and the other under the command of Lieut. Cripps.

On May 11th an accident befell one of the B.E.2c's at Garub, but, fortunately, no casualties resulted.

On May 13th the first Henri Farman biplane was flown by Lieut. Van der Spuy, and after a few minor adjustments were made it was flown four days later and proved a great success.

On Friday, May 21st, an armistice was arranged. On the following day, however, the armistice was ended. Two days later Lieut. Van der Spuy left the base at 7.45 a.m. and arrived at Garub at 9 a.m. on one of the H.F. biplanes. He left for Karibib the following day. The machine proved to be most satisfactory.

The eight machines arrived at Walfish on different dates, and all were erected and flown successfully, and on June 15th all the machines and men left for Karibib, Omaruru, and the field of military operations.

On June 24th, a night reconnaissance left Omaruru for Kalkfeld, and located the enemy about 35 miles away, returned safely to camp and reported. On June 26th General Botha inspected the machines and congratulated the corps on the good work done. Four days later Lieut. Hinshelwood made a two days' reconnaissance and located the enemy, and on July 26th Lieut. Cripps left on flight reconnaissance and returned to Otjwarongo with valued information.

Three days later peace was declared. The next few

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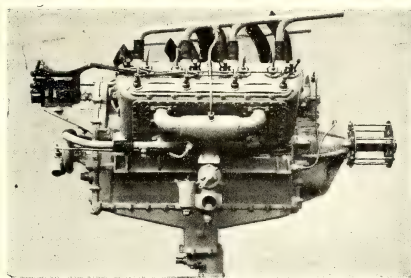
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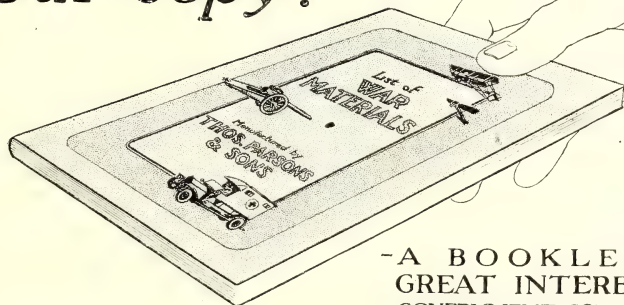


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weeks were devoted to dismantling the machines and repacking. The members were duly embarked and landed at Cape Town on July 29th.

U. S. A.

An important decision has just been rendered by the Commissioner of Patents vesting important rights in the hydro-aeroplane in Mr. Curtiss. The decision is announced in the following communication from the Curtiss Company :—

"Glenn H. Curtiss, head of the Curtiss Aeroplane Co. of Buffalo, has just been granted the patent claim to the hydro-aeroplane by Commissioner of Patents Ewing at Washington. This removes all doubt as to Mr. Curtiss's complete title to the invention, and gives him officially that full credit and title which the world has long since accorded him as originator, builder, operator and manufacturer of the hydro-aeroplane.

"The rendering of this decision completes a chain of claims on hydro-aeroplane and flying boats, giving Mr. Curtiss complete control of the commercial hydro-aeroplane and flying boat business, which he has built up in this country and abroad. Several patents have heretofore been granted to Mr. Curtiss on hydro-aeroplanes and flying boats, one of the most important of which was patented last June and covers practically all flying machines of the now well-known flying boat type."

* * *

A dispatch from San Diego, Cal., reports another new American record. Lieut. Walter R. Taliaferro, junior military aviator, attached Signal Corps Aviation School, on September 17th made a sustained flight of 9 hours and 48 minutes. Mr. Taliaferro used a military tractor with a 90-h.p. motor, and it is estimated that he covered more than 500 miles during the flight. The previous record, 8 hrs. 53 mins., was established by Lieut. Byron Q. Jones last January. Capt. Arthur Cowan, head of the North Island School and representative of the Aero Club of America, declared the record official.

The world's record for sustained flight is held by Reinhold Böhm, the famous German aviator, who made a non-stop flight of 24 hrs. 12 mins.

* * *

The New York correspondent of the "Weekly Dispatch" recently interviewed Mr. Hudson Maxim, the high explosive and aeronautical expert on the recently appointed United States Naval Advisory Board.

Some of Mr. Maxim's remarks are not without interest. Apropos aircraft in general he said :—"The aeroplane is a species of scarecrow. Count Zeppelin is a sort of 'bogey man' like 'Black Douglas.'"

His views on the defence of London are ingenious, if impracticable :—

"If I were a Londoner and had Government backing, I would fight Zeppelins in the following manner. I would have a circle of balloons around the entire city to serve as signal stations. These balloons would be adapted for and armed with machine guns, and would have a crew of two or three men. I would also have a platform on the top of each balloon with a military aeroplane ready for flight. The balloons need not be raised to the desired altitude except on the signal of danger. Consequently they would not be up in the region of intense cold, and it would be only necessary to raise them in this region when ready to do business.

"Zeppelins, in order to attack London, would either have to fly between, over, or below this circle of balloons, and they could not fail to be seen and heard a long way off, because at a considerable altitude above the city the least sound can be heard at a great distance. A Zeppelin could be heard coming long before it could be reached by gunfire. Each balloon would be connected by telephone and wireless telegraphy with all the other balloons and with the earth, and at once, so soon as the Zeppelins were sighted, the aviators in the basket of each balloon would

climb into their respective aeroplanes, launch them, and speed away after the Zeppelins. Of course, the altitude of the Zeppelins would be determined first and the balloons would be immediately raised to that height so that the aeroplanes would not have to climb far when starting for the attack. In case of high winds the balloons could be lowered into a big cylindrical shed; in other words, drawn down like a 'jack in the box' to the ground."

[It would be interesting to ascertain the effect of jettisoning an aeroplane and crew, weighing, say, 2,000 lbs., from a balloon. One is left in doubt as to whether Mr. Hudson Maxim is a champion leg-puller, a much misreported victim of journalism, or merely an amiable imbecile.—Ed.]

FROM DENMARK.

THE AEROPLANE's Danish correspondent writes :—

An official report, published by the Reichskolonialamt (the German Ministry of the Colonies) of the war in the colonies, so far as dealing with aircraft, runs :—"The following news are available of the English attacks on East Africa coastal cities by bombardment on open, not defended places, going against international laws (rather a long introduction!) :—On December 10th of last year the Englishmen attacked by help of a seaplane the 'Königsberg' in the Rufidschi Delta. By some unknown reason the seaplane was compelled to alight, drifting ashore to the north of the delta by the officer's residence, where the two flight officers were taken prisoners. [This confirms two letters already published on this subject. Though no casualty list has been published to account for the affair, one is led to believe that the pilot of the machine was Flight Sub-Lieut Cutler, who was flying a Curtiss boat at Durban when war broke out. He was appointed to the R.N.A.S. without training in England.—Ed.] Further is learned that the English have repeatedly used themselves of aircraft in the colonial war, the United States assisting even on this theatre of war in the deliveries of that kind of war materials, the steamship 'Mauretania' arriving short ago in Capstadt with a large cargo of ordnance, munition, and a big number of aeroplanes."

* * *

"Flugsport" (June 2nd) warns against sending view-cards of the German cities, especial those from the Southern and Western part of Germany, showing church steeples, ruins, and other characteristic buildings, as there is evidence of their being required through neutral countries by the enemy for assisting their aviators by the observation in the raids on German cities.—ANGLO-DANE.

[This shows how strangely the German and English minds resemble one another, for a very similar order was issued in England on October 9th.—Ed.]

* * *

The Headquarters of the 7th Army Corps has issued :—"It has got ascertained that hostile aeroplanes have landed spies in the occupied countries and those neighbouring the enemy, especially in distant rustic parts. So every German must consider it his patriotic duty to report immediately the landing of an aeroplane to the nearest police office or to the nearest military man, or if this can only be done at loss of time, alone or by the assistance of others to stop the passengers, or to search the environs for suspicious persons, if the aeroplane should have re-started. The aeroplane must not be damaged, and it must further be hindered that the pilot and the observer destroy papers, maps and photographic plates. Let everyone watch the matters in his part and not even the most deceitful plans of our enemies shall be able to do us any harm."

* * *

In "Flugsport" of June 2nd appears the following casualty list of the Feldflieger Department :—Capt. von Kleist, died from his wounds; Capt. and Observer Thumm, killed; Oberlieut. von Bornstedt, killed in fatal



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accident; Oberlieut. Clausius, heavy wounded; Lieut. Kraft, hitherto missing, taken prisoner; Lieut. and Observator von Oren, wounded in an accident; Lieut. in the Reserve von Grondzinski, killed; Officer Replacer and Aviator Wipperfurth, killed; Vizefeldwebel Kuschack, slightly wounded; Vizefeldwebel Ischirsnitz, heavy wounded; Subofficer Lindemann, killed; Subofficer Huber, killed by accident; Gefreiter Ischan, heavy wounded; Gefreiter Gebhard, hitherto heavy wounded, in prison-ship, surrendered by the French; Gefreiter Stoll, slightly wounded; Gefreiter Strasser, heavy wounded; Aviator Hölzer, drowned; Aviator Sopp, hitherto wounded, died; Aviator Eggert, killed in fatal accident; Aviator Koss, died from illness.

Bavarian Feldflieger Department: Lieut. in the Reserve Reichel, missing.

* * *

The casualties of the aerial troops in "Flugsport" of 8th September contains the following names:—Oberlieut. von Sachs, missing; Oberlieut. of the Reserve Grobe, killed in fatal accident; Lieut. Curt Lan, taken prisoner; Lieut. von Wedel, killed in fatal accident; Lieut. Völkers, killed; Lieut. Müller, in imprisonment; Lieut. of the Reserve von dem Hagen, killed in fatal accident; Lieut. of the Reserve Cleinow, in imprisonment; Lieut. of the Reserve Graefe, missing; Lieut. of the Reserve Lehnert, killed in fatal accident; Officer-Replacer Lindemann, wounded; Officer-Replacer Moll, slightly wounded in an accident; Vizefeldwebel Grunden, died from illness; Vizefeldwebel Wagner, severe wounded in an accident; Sub-Officer Tugen, wounded in an accident; Sub-Officer Schiller, severe wounded in an accident; Sub-Officer Niess, missing; Erich Rapsch, killed in fatal accident; Johannes Skibbe, killed in fatal accident; Hermann Henar, severe wounded; Joachim Hein, slightly wounded by the troops; Ernst Krüger, killed in fatal accident; Hermann Hempel, fatally wounded; Alois Spitz, killed in fatal accident; Johann Brosius, slightly wounded in an accident; Gustav Neuhaus, slightly wounded in an accident; Wilhelm Schlüter, missing; Gustav Schneider, died from illness; Max Alberecht, died from illness; Hermann Faust, died from illness; Otto Teichmann, died from illness.

On September 7th the aviator Höhndorf rose to an altitude of 3,250 metres with four passengers on a Kondor biplane, 120 h.p. Mercédès engine, at the Johannisthal aerodrome. The weight of the passengers and the fuel was almost as big as that of the biplane empty, and Höhndorf indulged prior to the war as a crack pilot in looping on an Union arrow biplane, 80 h.p. Gnome engine.

THE FIRST GERMAN PARASOL MONOPLANE.

The AEROPLANE'S Danish correspondent writes:—

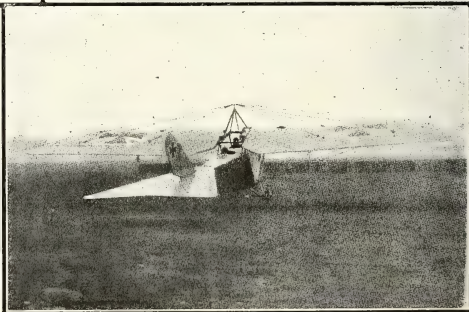
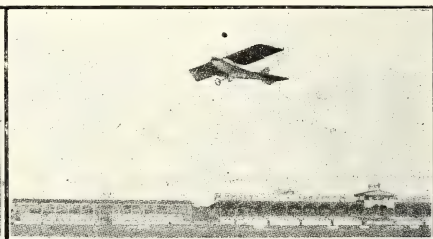
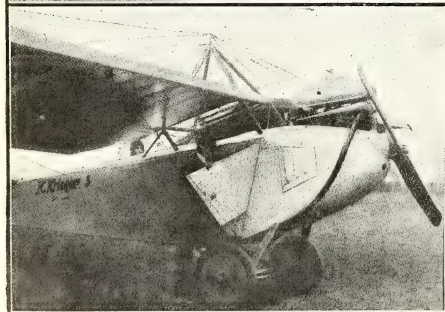
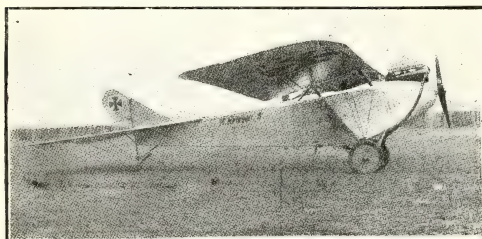
Even though the development has been the usual in the German military flying service, the "Taube" monoplane, giving way to the tractor biplane, represented in that country by the Albatros, Aviatik, and L.V.G. models, the Germans have experienced a want for a scouting monoplane, the proof of which is the imitation of the Morane-Saulnier monoplane, as it is turned out in quantities by the Fokker Aircraft Manufacturing Company and others. Now the Germans have had to go to France for fetching another monoplane type, viz., the Parasol design, the Germanised edition of which is illustrated to the accompanying description.

The monoplane is named from its pilot designer Karl Krieger, a former chief car driver to the Emperor, who took his ticket in September, 1911, on a self-designed monoplane, of which type he has brought out several quick ones. His new parasol monoplane has a span of 17.3 metres by a total length of 9 metres, the engine being a six-cylindersmotor of either 100 h.p. or 150 h.p.

The construction of the fuselage is carried out in steel tubes, spanned with wires, special steel tubes being employed by the pilot's and observer's seats to prevent a collapse of the fuselage. Having a surface of 30 metres the planes are connected with the fuselage in such a way that they can be displaced to and fro to assess a displacement in weight by the engine or other moments at any time.

The elevator is carried out elastic with the stabilizing plane in one part and the form of the wire-tower (cabane) renders the mounting of a machine gun to it possible. This being a hindrance to the entrance of the passenger, which has so to take place from the side.

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

In those savage regions which lie between Fulham Road, Cheyne Walk, the Marshes of Despair and the Isles of Enchantment, chance explorers who believe they have discovered new trade routes thither are often horribly frightened at the sudden appearance of some black-garbed vestal, with the words, "Fleisir, the young woman's called for the 'ands and harms." Which hearing, and the wild yell of the tribesman as he waves his gory knobstick, "Well, bring her in, cantyoudamyou?" and suchlike incantations, simply makes you go goosey all over with the murderous portent of it all, despite the treacherous hospitality that has lured you to your doom. And when the victim is brought in, mounts the wooden altar of obvious sacrifice with unflinching step, and proceeds to let go all upper canvas, royals and stunsails, so to say—well, you just don't know what is going to happen next or which.

Nothing does. The tribesman simply seizes what seems to be a bit of charred fire-stick and tells her to stand over a bit more to the light. Then your tecap stops trembling, and you drily swallow the mouthful of bread-and-butter that had so nearly been your last. . . . And through the golden haze of an October afternoon you gaze upon the lost arms and hands of dear white Aphrodite, new-drawn from Paphian wells. Or no; as she raises them, hungrily appealing, it is Ariadne, knee-deep on that cold beach of Naxos. All the world that has ever mattered to man, woman, or little child lies about those arms and hands, calling, calling. So nothing else can matter. The face with its slit mouth and heavy nose that is not quite straight, the dull eyes and lustreless hair are all mercifully hidden in the shadow that always screens enchantment. And the cheap serge skirt may well conceal thighs of Flanders, coarse ankles and clumsy feet. What do we care, who can only see those arms and hands? . . . But in this country of strange magic some have looked on such sundered beauties too long; and for their dear sake, seeking them for their own shrines, have found that they only possessed—the rest. Which is one of the cruelties of Things-As-They-Are. But it shows you the wondrous importance of details; all that the French in their foolish wisdom call the little carefulnesses; really the greatest and most significant matters.

Y: AND WHEREFORE.

For it is just in these, as I shall try to show, that the Green aeromotor, in any size, chiefly scores. I dare say that, if quite apart from any of this discursive-descriptive stuff you have sat up and taken notice for yourself—which is the only sound way of study—you would know by this time most of all there is to know about its mass design. At any rate, all that is to the makers' interest that you should know, be quite frank. I may, however, call your attention to the fact that the big 300 h.p. is very much a Y type rather than a V, because, for one thing, you get a notably better thrust on the crankshaft, and in an eight or twelve cylinder merely a negligible increased tendency—and no more than that—to couple, in my opinion at least. For another, because, with overhead valve gearing, you can push this Y formation to quite an extreme; and for still another, because it gives a handier installation in an aeroplane, with more room on either side. First and last, you must design a motor for its special work. It is no use merely adapting the drawings of some track-monster for aeroplane purposes. Half the time—and certainly in none of those beautiful Teutonic fuselages which are not designed on the famous herring-tin pattern, but in a manner more duly appreciative of efficiency values than anything we can show—it simply would not fit. Whereas your Y-typed motor will fit any machine of a type demanding such power; indeed, may even replace a big vertical without any particular

increase of fuselage-beam forward. What then, you will say, could you not do with a Y type two-stroker? Ah!

THE "ROSSYNOLL."

But analysing these details from greater to less, you will have noticed that generously thickened—and therefore widely hollowed and strengthened—crankshaft; and suchlike essential parts that are almost of the mass. You would have thought, perhaps, that the connecting-rods might, *en suite*, have been likewise hollowed out as oil-conduits to the gudgeon-pins and cylinder walls, in the classic De Dion-Maudslay fashion. No doubt—albeit the true proportioning of relative diameters, so as neither to feed too much nor too little oil, is a tricky business—if this were a car or a marine motor. But it isn't. It is a motor for which every pint of oil—and the weight thereof—that is saved, means anything from one to five miles further flown. One, furthermore, in which the weight of reciprocating parts is a most important factor. And you have to choose between leaving a lot of metal in a round-sectioned hollow rod, with a narrow conduit feeding only the right amount of oil and no more, or an almost tubular one, light enough in itself, but containing a lot of oil of no negligible weight, and feeding altogether too much of it. For again we have to consider a motor proposition which must essentially give clean combustion, never fouling a plug. Very well, then, there can be no better compromise with the conditions than the chosen H sectional rod, with its shank drilled out in a dozen holes, and the bucket extensions on its big ends, which throw all the oil on the cylinder walls, that they, the pistons, or the gudgeon-pins need, as it comes from the crankshaft.

PISTON-POINTS—AND GUDGEON-GADGETS.

Also, you would perhaps have thought the pistons a wee short-kilted, considering the length of their travel. And so should I, and do, seeing that extra length could be as well drilled out to save extra weight and form oil-pockets withal. But you cannot fail to notice admiringly the two little oil-grooves turned around the piston heads between the rings, which—for the reason I gave on a previous occasion—get as much oil as is needed to the right spot, and, pocketing it, keep it there from rising above the last ring, far better than any flimsy obturator could possibly do. And in the big 300 h.p. model you will see that the piston is mostly waist, except in the sleeving of the gudgeon-pins, this waist alone forming a prodeegious oil-pocket. And in all Green models you will notice this unique point—I have never seen it in any other—that the gudgeon-pin is secured solid to the small end of the connecting-rod, so as to oscillate in its own brasses, instead of being pinned stationary in one or other of the conventional ways. Now, the advantage of this is threefold. First of all, the two fastening screws, set through the grip of the small end in this way—and, in any case, handily wire-coupled through their heads—get no jar from the piston, and thus cannot work loose, even if not so wired for extra security. Secondly, as they cannot loosen, the gudgeon-pin—especially when held as it is—cannot slide endwise to score the cylinder wall. Actually its ends come short of the full piston diameter from one-sixteenth to an eighth of an inch; so additional oil-pockets are formed. And what with these and the oil they collect, we get the third advantage that the oil gets worked nicely into the bearings by the slight oscillation of the gudgeon, before the heat of the piston-head can get to it. So, never being burnt, this part never goes dry; and no ovalisation can take place to produce any undiscoverable knocking. Originality does pay, once in a while!

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GREEN VALVE-POSITION: AND WHY.

Then there are just a few more points about the Green valve-cavities. I need not repeat my own views as to the possibilities, even advantages of a transverse, instead of an axial location, which would, of course, involve such valve-gear changes that the design would be no longer the characteristic Green, but some other. As it is, they have, it must be admitted, rather like the pots of a chimney, which cannot be shortened to reduce the cylinder height without lessening the essentially large inlet and exhaust areas. But withal, they do at least secure the practical advantage of an ample head of water just where it is most needed, with the further effect of cooling not only the valves to a greater degree than in any other design, but also the exhaust passages, as well as warming the induction just before mixture entry, the great secret of complete and economical running. These are points proved in practice, and thus for once outweigh those aesthetic conditions which otherwise tell so much in motor design. And need it be said again that every pint of go-juice saved means more miles flown for every pint carried aloft? All the difference, maybe, between freedom and internment or—?

THE LATEST WATER-SEAL DEVICE.

Again, too, one may refer to that rubber water seal. Even with so simple a casting, it is just possible to get a pinhole—or worse, one of those invisible cracks known in the timber trade as a grain-shake—in the containing belt-flanges. So as to avoid this—and incidentally cheapen machining on time—Mr. Green has latterly revived one of his original patents of nine years ago, which is better, since it expands the rubber both ways: against the cylinder as well as the jacket. This consists of a pair of flange-rings, each one halved, with the ends of each half stepped, or, rather, scarfed over one another. These rings are of a size to fit closely, but freely, round the cylinder, and are bolted together all round, with screw bolts threaded into the upper one: the bolts, of course, being set through holes in the ring of rubber between the metal ones. Now these all being set on, and the copper jacket over them, it is obvious that the more the screw bolts are tightened, the more the rubber is compressed between the upper and lower rings, and expanded inwardly against the cylinder trunk and outwardly against the jacket, with an altogether better result than in the old way. But since these metal rings are merely compressors and expanders, and have to sustain no strains of any other kind, surely it would save weight to make them of some reliable aluminium alloy, copper coated, instead of steel.

(To be continued.)

THE LIMIT.

[The superbly thrilling narrative published in "The Paper that Developed Airmanship"—by the way, why such modesty? Surely *invented* would be nearer the mark—on which comment was made in a recent issue, has produced a similar convulsion in our own Aeronautical Expert. His spasm appears below, and no one can vouch for its authenticity on any possible grounds.—Ed.]

The call-boy woke me at 5.30 a.m., and, as I toyed with my early morning "doorstep" and mug of cocoa, I could see that it was going to turn out a glorious day for my flight to France. This made me feel elated, and I dressed with special care, particularly seeing that, when I walked, my sporrán did not interfere with the flapping of my medals.

I was on the aeronautical ground at 8 o'clock, and found the mechanics already removing the tarpaulin from off the great bird-like machine on which I was to fly.

In another ten minutes me and my mate were seated in the bow of the aeroplane; in one hand I grasped a hot potato—for it was a cold day—and in the other the

control levers. The next moment I had released the brake, let in the clutch, and with a whistling groan we scudded away.

What a view there was! Just below on the left were the Starch Green Gasworks, on the right the Sloshton Aquarium, looking, a thousand feet away through the morning mist, just like an aquarium; in another five minutes we could see Berlin in the distance. Soon we came in sight of the British Headquarters, but to get to them we had to cross the German lines.

I jammed on full speed ahead, but before we had gone another mile a huge German Taube came looping the loop towards us. Although the Hun machine was twice the size of ours and had two engines to our one, we, on the other hand, made more noise and had four wings to his two, so the chances were about even. As we had to reach the British lines before dusk at all costs, there was no way out but to give battle.

What a battle that was! The clouds of dust, the dazzling shriek [Steady, lad, steady.—Ed.] of the engines, the clash of bayonets. For a couple of hours the contest raged without advantage to either side. At last, when the foe was just bearing down on us at full speed, the sparking plugs of his engine rattling with excitement, a bright idea flitted through my brain. The German made a wild lunge at us—and missed. With a lightning movement I unslung the machine-gun from round my neck so as to give my arms more freedom, and I shoved the lever into the reverse gear. With a sobbing groan of protest our machine flew quickly backwards; then, just as we passed the astonished Hun not a yard away from us, I leaned over and grasped him firmly by the shoulders, my mate doing the same to his partner. Thus we swung them clear of their machine—which went flying on—and held them, dangling and wriggling, with the chassis of our aeroplane as the only *pièce de résistance* between them and the earth. The next moment we had hurled the wretches to their doom.

But we were not out of danger yet. Rapidly our land-plane was sinking, right onto the enemy's lines. What was wrong? Quickly I felt the tyres: they were tight. Glancing into the boiler-room, I saw that the furnaces were burning merrily: nothing wrong there. Then I counted the cylinders of the engine: none were missing. In vain did we try to recover ourselves by lightening our load. First we threw over the sand ballast, then the tool box, then the commissariat department; everything that could be spared went over—even the cotton-wool out of our ears. But it was of no avail, for we continued to fall.

At last my mate pointed to the right wing of the machine, and in a trice I saw what was wrong. In reversing, the aeroplane had run into the sharp edge of a cloud, and punctured one of the wings of the machine. There was only a small round hole in the fabric, but it had let nearly all the gas out of the wings. No wonder we were falling! Without a moment's hesitation I ripped out the packet of goldbeater's skin which I always carry concealed in my hat, and repaired the puncture. Our mount quickly recovered its equilibrium, and we then proceeded unmolested to our lines, picking up the dining car, as arranged, at 5,000 feet over B—in Flanders.

W. J. R.

THE GRAHAME-WHITE CIVILIAN SCHOOL.

An excellent start has been made by this school. It is worthy of note that the first ticket secured has been taken by M. de Meulemeister, a Belgian, who has now joined the Belgian Flying Corps. Mr. Osipenko was the instructor, and he is now to be assisted by Mr. Cecil L. Pashley, who was recently attached to the Northern Aircraft Company at Windermere. The school is under the experienced management of Mr. A. Murray Ross, and the few remaining vacancies will no doubt be quickly filled up. Several more of the new G.-W. box-kites, fitted with 60 h.p. le Rhône engines, are now practically ready.

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ESSENTIAL COMPONENTS.

Brown Bros., Ltd., of Great Eastern Street, are a firm of merchants who are famous for supplying missing links to every conceivable kind of mechanical contrivance. For instance, one can buy enough "bits" of motor-cycles at Brown Bros., Ltd., to build a complete machine, and this statement seems almost true of motor-cars and even aeroplanes.

Among the aircraft "bits" which are in constant demand by the authorities are steering wheels, landing wheels, tyres, turnbuckles, control levers and wires, eye-bolts, thimbles, piston rings, dashboard lamps, accumulators of all types, "Oleo" plugs for Gnômes and Salmsons, and also "Lodge" and "Pognon" plugs, copper-asbestos washers for Gnôme engines, ignition accessories of all kinds, and so forth.

Brown Bros., Ltd., also supply all kinds of raw metal, such as sheet brass, strip brass, aluminium sheeting, steel, brass, and copper tubing, and "Union" drawn screwing and cutting steel of every dimension.

An exclusive article which deserves the greatest success is indestructible rubber petrol piping. This piping is built up of pure rubber and fabric, and is sufficiently thick to withstand considerable pressure or suction, so that it is perfectly suitable for use with pressure tanks. The great drawback to the usual copper tubing is that it is so liable to vibrate to fracture point, either at the union or anywhere along its length. There have undoubtedly been a number of fatal fires caused in aeroplanes by fractures of this nature, both in the air and as the result of smashes, where the petrol piping has been broken by concussion and the wreck has been set on fire either by flint sparks or from the sparks of the magneto if the engine has continued to run for a few seconds after the machine has hit the ground.

Several years ago THE AEROPLANE strongly advocated the use of flexible petrol piping and elastic coverings to petrol tanks, and it is satisfactory to know that at least the first article is upon the market on a commercial scale.

Brown Bros., Ltd., have such an enormous stock of fittings of all kinds that aeroplane constructors need never despair of procuring any little-used gadget which is urgently required, be its existence never so improbable, before the organisation at Great Eastern Street has been given an opportunity of searching for it.

GOING AHEAD CONTINUALLY.

The General Aeronautical Co., Ltd., continues to expand in a manner which must be as gratifying to its directors as it must be profitable. New premises have now been acquired near Willesden Junction, and in a very short time the whole of the manufacturing of the well-known G.A.C. specialities will be conducted in one group of buildings. Here is a firm which is playing an important part in aiding the conduct of the campaign of the Allies, and successfully maintains a high standard.

ANOTHER ALLIANCE.

Mr. Sydney Pickles finds he has more work to do in testing new machines for contractors than he can comfortably manage. Realising the serious delays which might arise if by any mischance he should be laid up, even for a short period, he has now arranged to have the assistance of Mr. C. B. Procter, who was, until quite recently, an instructor at the Beatty School of Flying. Mr. Procter has an excellent reputation as a careful and thorough pilot, and his many friends will wish him well.

A RECORD IN CERTIFICATES.

The list of aviators' certificates taken during last August, which has been issued by the Royal Aero Club, shows that no less than twelve pilots were qualified in that month at the Grahame-White School at the London Aerodrome, Hendon. This constitutes a record number of "tickets"—as they are familiarly called—taken at any one private school in Great Britain during a month.

A BUSINESS MAN'S ACTIVITY.

In a recent note on the activities of Fredk. Sage & Co., Ltd., the writer omitted to pay a well-deserved tribute to the work of Mr. David Hawes, Mr. Coulson's able colleague. Mr. Hawes was responsible for the excellent laying out of the firm's new works, and is very actively interested in the recent developments therein. Apart from his strenuous work in the factory, Mr. Hawes devotes such spare time as he may have to the entertainment of sailors and soldiers. Being of an ingenious turn of mind he has fitted up his big Daimler car as a travelling cinematograph show, and with this outfit he has done much to relieve the monotony of life at many air stations, camps and hospitals, so that in this time of stress he is doing doubly valuable work for the country. Before the war Mr. Hawes had charge of the firm's Continental business, in which his knowledge of numerous languages made for uniform success.

PARTS WANTED.

The Cooper Laboratory for Economic Research, of Watford, are contemplating the manufacture of aeroplanes in large numbers, as they have special facilities for assembling and testing.

The directors are anxious to get into touch with a few firms who are able to supply them with the necessary parts for this class of work, such as small metal turning, sheet-metal work, oxy-acetylene welding, and woodwork.

Firms who are seeking for work of this nature will do well to apply to the Laboratory, Rickmansworth Road, Watford, Herts.

It should be said that no engines or engine parts are required, and the laboratory would supply all the castings and metal for working.

A NECESSARY IDENTIFICATION.

Now that aeroplanes are becoming a common article of commerce, and especially now that so many different firms are making similar machines to someone else's designs, it becomes a matter of necessity to manufacturers that they should distinguish their machines from those of similar type. The old unmistakable method of painting the name of the aeroplane along the side of the body in letters as big as the body itself is not regarded with favour by the Naval and Military authorities, and the utmost a firm can do to distinguish its products from others of the same design is to fix thereto a small and neat transfer similar to those used on motor-cars, bicycles, and so forth.

This method of identification is most necessary, because flying officers naturally like to know where their mounts are built, and a firm's reputation for good work acquired in this way naturally becomes extremely valuable even though the machine may be built to someone else's design. For instance, officers may clamour for Smith-built B.E.s, and refuse to fly Jones-built B.E.s. Similar arguments apply to makers of propellers and other parts.

A firm who had the foresight to cater for this transfer business a considerable time ago is J. H. Butcher and Co., of Solito Works, 306, Moseley Road, Birmingham, which is now supplying transfers to the leading British and French makers of aeroplanes and propellers. Mr. Butcher started in this business many years ago, and has long had a very large proportion of the trade in cycle and motor transfers. He will be pleased to submit designs for transfers to any firm desirous of obtaining their goods.

TO AIRSHIP FIRMS.

Mr. Samuel L. Collins, A.M.I.A.E., an engineer who has had considerable experience in the design and construction of airships, wishes it to be known that he is now disengaged and is free to undertake such work for any firm which is engaged upon or contemplating the manufacture of airships. Mr. Collins, who has also had business experience in addition to his engineering work, will be glad to receive inquiries at "Royel," Sunbury-on-Thames.

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THE NEW LORD MAYOR.

As forecasted in *THE AEROPLANE* of July 14th last, Sir Charles C. Wakefield has been unanimously elected Lord Mayor of London for the ensuing year. At a Common Hall held in the historic Guildhall, attended by a great gathering of notable City dignitaries, and characterised by the quaint ceremonial of many centuries, his election was formally proclaimed, and on November 9th he enters upon what will certainly be an eventful year of office.

Sir Charles is, of course, well known as head of the great firm of C. C. Wakefield and Co., Ltd., specialists in lubricants. In the aviation industry it is, perhaps, superfluous to mention the fame of "Castrol R." Thanks to the remarkable energy and business abilities of the founder of the firm the name of "Castrol" is the industrial equivalent of a household word. This is in no small degree due to the personal interest displayed by Sir Charles in the rise and progress of aviation.

At a dejeuner at the Mansion House in honour of the Lord Mayor-Elect and Lady Wakefield, the retiring Lord Mayor said:

"I now ask you to join me in drinking to the health of the Lord Mayor-Elect, and in wishing him a prosperous and successful year of office. (Hear, hear.) Probably no man has been elected to the civic chair with greater unanimity, and no man will enter upon his Mayoralty with wishes more sincere from his colleagues and friends. (Applause.) The municipal career of Sir Charles Wakefield has extended over eleven years, and he has served, first as Common Councilman, next as Sheriff, and then as Alderman. In all these positions he has fulfilled, with entire satisfaction, the anticipations of his friends and the community at large. There is no good and useful work in the City of London with which his name has not been identified—(hear, hear)—and he has been especially associated with the National Children's Home—where 2,350 children are always being maintained and educated—the City Dispensary, and the League of Mercy. His public spirit has been shown to-day in his presentation of a bust of the Queen for the Guildhall; our friend and colleague, Sir Edward Cooper, contributing the companion bust of the King. I congratulate the Ward of Bread Street on at last having a Lord Mayor of its own after a period of 52 years, and the Cordwainers' Company on seeing for the first time one of its members filling the civic chair. If I were not a Liverpool man myself, I might enlarge on the merits of Liverpool men as Lord Mayors of London, but modesty makes me refrain. It is very remarkable that, while the City of London in over 700 years never possessed until this year a native of Liverpool as its Lord Mayor, it now has two in immediate succession. They say in Lancashire—'What Liverpool thinks to-day England will think to-morrow.' (Laughter.) We have no doubt of the ability and distinction with which Sir Charles Wakefield will fill the office of Lord Mayor, and we are assured of the grace with which Lady Wakefield will perform the duties of Lady Mayoress. All that is necessary is for victory to attend our arms and peace to reign again in this old City of ours, and, if that be achieved, I feel certain that the Mayoralty of Sir Charles Wakefield will be in every way brilliant and memorable. I give you the health of 'The Lord Mayor-Elect and Lady Wakefield.'"

The Lord Mayor-Elect is to be congratulated on the proud and responsible position in which he now finds himself, and one may feel assured of his ability to maintain the traditions of his office.

It is gratifying to know how deep an interest he shows in aviation, and doubtless he will not be likely to overlook any opportunities which may arise during the next twelve months of furthering, in his official capacity, the progress of so vital an industry.—D. W. T.

MR. PICKWICK IN HENDON.

That punctual servant of all work, the Sun, had successfully concealed himself behind a mass of grey clouds on the afternoon of Saturday, the ninth of October, one thousand nine hundred and fifteen, when a coach drew up at the end of Colindale Avenue, Hendon. A young man in bright livery, with an old white hat thrown carelessly on one side of his head, leaped down with alacrity and assisted the passengers to alight.

The cheery attendant at the gate, his face beaming with contentment as usual, leaned as far over the half-door as a too generous Nature would permit him to do, and looked hard at the new arrivals. Accustomed as he had become to the visits of Oriental travellers, heroes of shipwreck, diarists of the Stuart period, and neutral journalists, on this occasion he could scarcely believe his eyes.

Yet there could be no mistaking the portly form and twinkling eyes of the great Samuel Pickwick, and his faithful friends—the susceptible Tupman, the poetic Snodgrass, and the sporting Winkle. This was, indeed, a great day for Hendon.

"Is this the Aerodrome?" said Mr. Pickwick.

"This is the very place, sir," said Sam Weller. "And a very fine place, too, sir—and vot a vidth, as the customer said ven he looked at the barmaid's mouth."

The party advanced towards the centre of the half-crown enclosure and surveyed the landscape with interest. It was, indeed, a fine stretch of country, gently undulating, with an Autumn mist hiding the distant hills. High up in the sky a diminutive aeroplane (a Caudron belonging to one of the name of Moore, as Sam ascertained by judicious inquiries), was doing its best to lose itself among the clouds. On the ground several other machines were resting from their labours, or being prepared to accomplish wonderful things.

Mr. Pickwick was deeply stirred by the spectacle. After a few moments, he mounted upon a dilapidated chair, and with one hand gracefully concealed beneath his coat-tails, and the other waving in the air, to assist his glowing declamation, he addressed his friends:—

"Proud as I am of the honour you have done me in electing me President of your Club, and sensible as I am of my unworthiness for such an exalted position—(loud cries of 'No')—this, gentlemen, is the proudest day of my life. Often have I been fascinated by the tales I have heard of what has taken place at this famous aerodrome, and over-awed on reading the advertisements of its proprietors; but little did I dare to hope that one day I might be a humble spectator of the marvellous things to be seen here every Thursday, Saturday, and Sunday. Fame is dear to the heart of every man. (Cheers.) Poetic fame is dear to the heart of my friend Snodgrass; the fame of conquest is equally dear to my friend Tupman; and the desire to earn fame in the world of sport is uppermost in the breast of my friend Winkle. I will not deny that I may be influenced by human feelings—(cheers)—possibly even by human weaknesses—(loud cries of 'No')—but if ever vanity breaks out in my bosom it is a desire to become immortalised in the pages of that masterly monument of literature, *THE AEROPLANE*—(tumultuous applause)—and, perhaps, even be photographed, as a notable visitor at Hendon. It is the duty of every citizen to take an intelligent interest in the conquest of the air. We can all do something to assist in furthering this great science. It is the mission of mankind to rise in the world!"—(Hear, hear.)

At this moment the chair collapsed, and the eloquence of Mr. Pickwick was rudely terminated. Mr. Winkle and Mr. Snodgrass assisted him to rise, and the four, followed by Sam, proceeded in the direction of a machine which had just arrived from the realms of space.

"I wonder what kind of aeroplane that is," remarked Mr. Pickwick.

A tall, thin young man, in a green coat, standing near,

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overheard the words, and replied: "B.E. two C, sir,— army bus, that—devilish fast, too—see how it leans forward—anxious to get away—four-bladed propeller—twice as fast as two-bladed—extraordinary effect speed has on pilot—wouldn't believe it myself—well-known officer starts out—everyone knows his name—travels so fast that when he gets to Hendon he has left his name behind him—hasn't got one—not even a number like a convict—ask commissaire, sir!" And the stranger, hardly pausing for breath, led the way to the refreshment room, where he called for brandy hot all round.

Mr. Pickwick was about to thank him for his information and hospitality, when he went on volubly: "Not at all, sir—great pleasure—last chance to stand anyone a drink—all treating stopped Monday—Government orders—damned rascals—this bar won't last a week—terrible affair—no more pupils—no visitors—no nothing."

"Very singular, that," said Mr. Pickwick. "I had no idea the effects would be so serious. Will you allow me to make a note of that?"

"Certainly, sir, certainly," went on the stranger. "Look at Scotland—no treating—no drinks after nine—aviator out one evening—over Forth Bridge—beautiful weather—fine scenery—keeps flying till petrol used up—comes down—five minutes past nine—not a drink to be had—dies of broken heart."

"Very sad," said Mr. Tupman.

"Deeply touching," sighed Mr. Snodgrass.

"Poor fellow," murmured Mr. Winkle, visibly affected.

Meanwhile, Sam Weller had been walking round the enclosure and had stumbled across a fat, red-faced boy, who was sleeping soundly in a corner, his head pillowed on an empty tin can, bearing the word "Shell." The boy awoke with difficulty, and asked Sam where he thought he was a-comin' to.

"That's all right, my young cock-sparner," said Sam. "Don't let me upset your beauty sleep, 'cos you wants vun badly. Vot vos you a-sleepin' for?"

"Nothin' to eat and nothin' to see," said the fat boy. "I'm a-waiting for the master to go home. Been waiting since three. I want one of them shilling teas."

"Vot for?" asked Sam.

"They lets you eat as much as you like," said the corpulent youth, leering horribly. "There's a young woman over there now as has had seven cups of tea and eight pieces of cake. I see her swellin' wisely afore my wery eyes."

"You'll come to a dreadful end, as they said ven the aviator joined a night-club," replied Sam. "Who's that young gent over there?"

"That's Grahame-White," whispered the youth, in impressive tones. "You spell it with a we. He's one of the fellers as discovered America. Shall I tell you something?"

"That all depends," replied Sam. "Perhaps I shan't like it, as the lady said ven her husband started to drown her in the bath. Vot's it about?"

"I wants to make your flesh creep!" said the fat boy. Sam looked concerned.

"One dark night," said the youth, getting closer, "a lot of them Zeppelins came over to London to look for the aerodrome and destroy the bar. Grahame-White rushed out from the West End, where he was a-waitin' for them with a big car with powerful big lamps on it, and showed 'em the way to Hendon. And when all the aviators wanted to fly up into the air and protect the bar from being all busted up they found all the sheds was locked up—and Grahame-White had the keys in his pocket! And when they broke the sheds open every one of the machines had its tail pulled off and nobody could make 'em fly, so Grahame-White was sent to the Tower to be shot. And they shoots him reg'lar twice a day, and he's got a fearful cold already through bein' up so early in the mornings."

Sam was about to make some observation on this ex-

traordinary narrative, when Mr. Moore, who had been flying for nearly an hour at a height of four thousand feet, descended, and the fat boy, after a look at the machine and its pilot, curled himself up and went to sleep.

By this time Mr. Pickwick and his companions had received permission to make a close inspection of some of the aeroplanes. Suddenly, Mr. Pickwick's eye fell on a portion of a machine, and his attention became riveted at once.

"Bless my soul!" he exclaimed. "This is very strange."

"What is strange?" inquired Mr. Tupman, gazing eagerly everywhere but in the right direction, and catching his face against a wire.

"There is an inscription here," said Mr. Pickwick.

"Is it possible?" said Mr. Winkle, who was trying to scrape some thick and tenacious oil off his trouser legs.

Taking out a clean handkerchief, and rubbing off the mud with great care, Mr. Pickwick slowly deciphered the following letters:—

D O
P E D
W
I T H C E L
L O N.

His eyes sparkled with delight, as he gloated over his discovery. Here was something of undoubted importance—something worth close investigation. Unable to obtain permission to take away the machine, he proceeded with due solemnity to copy the inscription into his note-book, amid the admiration of his devoted followers. This done, he suggested they should celebrate the occasion in convivial manner, and as no other events seemed likely to occur they returned to the bar-room, where the rest of the afternoon was spent in festivity and conversation.

The room was filled with a social circle which comprised many of the flying men of the day, whose characters and manners it was the delight of Mr. Tupman to observe; whose witty sayings and doings it was the habit of Mr. Snodgrass to note down.

They learned that Mr. Osipenko had that afternoon taken up some passengers in the five-seater without mishap; that Mr. Virgilio and Mr. Manton had been flying; and that Mr. Barrs had not, because his engine was not going well enough for his liking; and that during the week there had been two unfortunate accidents to pupils, one from the Beatty School having broken his arm, and also the record of the school, as being the first of Mr. Beatty's pupils who has ever been damaged seriously; and one from the L. and P. school, having broken his machine through landing on a fence.

When night fell they returned to the White Hart Inn, in the Borough, near the timber yards of Joseph Owen and Sons, accompanied by Sam Weller, while the fat boy slept on undisturbed in a peaceful corner.

On Sunday it was a pleasant day, but the wind was strong. When they reached the aerodrome, nothing was to be seen in the air, save one or two crows, who gave exhibition flights of great daring.

"Can you see any aeroplanes?" said Mr. Pickwick.

"No, sir," replied Sam.

"Have you a pair of eyes?" said Mr. Pickwick.

"Yes, sir," replied Sam. "I have a pair of eyes, and that's just it. If they was a pair of patent double million magnifying gas telescopes of hextra power, perhaps I might be able to see round the refreshment rooms and across the Channel, where the flyin' seems to be this afternoon; but bein' only eyes, you see, my vision's limited."

There were many spectators present to see the flying, if there had been any. Large numbers of passengers were ready to pay the necessary fee to be taken aloft and hurled this way and that by the sportive gusts, had any aviator felt inclined to accept the responsibility, as well as the cash. It was true that Mr. Osipenko made several

straight flights, to show his fearlessness in a high wind. Mr. Barrs also flew several circuits on the Mann biplane, to the special delight of Mr. Snodgrass, who announced his intention of at once composing an epic poem, entitled "Alone in the Clouds with a Mann."

"Things are quiet," said Mr. Pickwick.

"Yes, sir," said Sam, "very quiet, as George Robey said ven he vos performin' in a deaf and dumb asylum."

"The air is very fine here," said Mr. Pickwick, "and the Sabbath calm very restful. I think, however, in view of the grave crisis through which our great and glorious country is passing to-morrow we might return to London, with perhaps a call at the Crown Inn in Cricklewood on our way."

"An excellent idea, sir," said Mr. Winkle. "You must have one with me."

"And with me," said Mr. Tupman.

"And with me, too," said Mr. Snodgrass.

The stranger in the green coat suddenly reappeared.

"Curious thing—Crown Inn," said he. "Just going there myself—delighted to join you—sounding the last toast—beer to-day and none to-morrow—country's going to the dogs." And he led the way to the coach.

"Vell, here we go," said Sam to himself, as they started off. "Now we shall see some fun, as the mechanic said ven he put the whisky in the tank and filled his guv'nor's flask with petrol."—D. W. T.

School and Weather Reports.

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AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio and A. E. Mitchell.

Pupils out during the week: Messrs. FitzHerbert (15 mins.), T. Jones (15), Baker (10), Begg (35), Bowick (10), Brown (58), Bryndlson (10), Campbell (15), Collett (14), Collier (37), Cowper (52), Cumming (20), Davison (10), Duffus (36), Fawcett (24), Hodgson (40), L. F. Jones (15), Kirkwood (20), Lashmar (28), Mellings (34), Murdoch (10), Nash (25), Nicholson (44), Overton (10), Owen (10), Patterson (50), Podmore (30), Stagg (20), Symington (50), Thompson (10), Halford-Thompson (15), Tremlett (15) and Whincup (25).

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractor biplanes.

Exhibition flights were given on Thursday and Saturday by Messrs. W. Roche-Kelly and G. Virgilio, and three passenger flights were taken.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, G. Irwing and C. Jaques.

Pupils: Messrs. Woods, Scott, Hordern, Little, Law, Lees, Northrop and Roberts rolling. Messrs. Knowles, Farrow, Lewis and Lander straights.

Eights or circuits alone: Messrs. Rochford, Medaets and Dalrymple.

Good tickets have been taken during the week by Messrs. S. Dalrymple and L. H. Rochford.

Machines: Four L. and P. tractor biplanes.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton and Winter.

Pupils with instructor on machine: Prob. Flt. Sub-Lieuts. Aplin, Biscoe, Corry, Davenport, Davies, Gammon, Graham, Hackman, James, Man, Sadler and Till.

Doing straights alone: Prob. Flt. Sub-Lieut. Biscoe.

Circuits with instructor: Prob. Flt. Sub-Lieuts. Biscoe, Cross, Davies and James.

Machines in use: Grahame-White biplanes.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructor for the week: Mr. Russell.

Pupils with instructor on machine: Messrs. Fraser, Hughes, Howe, Jones and Ellis.

Circuits alone: Mr. Ellis.

Certificate taken during week by M. A. de Meulemeister.

Machines in use: Grahame-White planes.

AT THE HALL SCHOOL.

The following pupils received instruction during the past week with Mr. H. F. Stevens: Mr. A. Watson doing circuits, figure eights and glides.

With Mr. C. M. Hill: Messrs. Bangs, Seward, Butterworth, B. Watson, Brandon, Hall, Butterworth, Wilkins, Hamer, Drew, Broad, Stirling and Punnett.

With Mr. Charles Bell: Messrs. Nicolle, Dodd, Wooley, Shum, Bond, Dresser, Captain Grey, Evans, Ackroyd, Manley, Lieut. Bell, Camberbirch, Rattray and Mann.

Certificate was taken by Mr. A. Watson, who took his ticket in a strong wind.

Machines in use: Hall (Government type) tractor biplanes.

AT THE HALL FLYING SCHOOL.

Week ending Sunday October 3rd, 1915 (delayed in transit). The following pupils received instruction with Mr. H. F. Stevens: Messrs. Bayley and A. Watson (all doing circuits, figures of eight and volplane landings). With Mr. C. M. Hill: Messrs. Butterworth, Mason, Drew, Wilkins, Bangs, Cook, Broad, Punnett, Hamer, Ackroyd, Seward, Stirling and B. Watson (circuits and half circuits). With Mr. C. Bell: Messrs. Nicolle, Dodd, Bond, Dresser, Lieut. Bell, Wooley, Shum, Evans, Manley, Arnsby, Young and Camberbirch (rolling and straights).

Machines in use: Hall (Government type) tractor biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

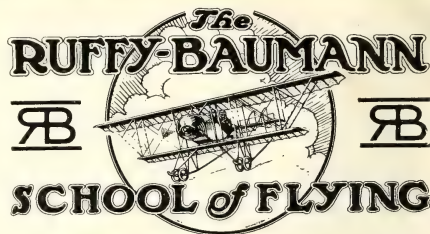
Instructors for the week: Messrs. W. Rowland Ding, J. Lankester Parker and W. Laidler.

Pupils with instructor on machine: Messrs. Barber (20), Coats (34), Lindner (7), Robertson (26), Ridgway (9) and Yates (22). With instructor as passenger: Messrs. Lawton (15), Part (11), Robertson (15) and Ridgway (14).

Eights or circuits alone: Mr. Refd (9).

Machine in use: N.A.C. 80 Gnome biplane.

Several passengers were carried during the week.

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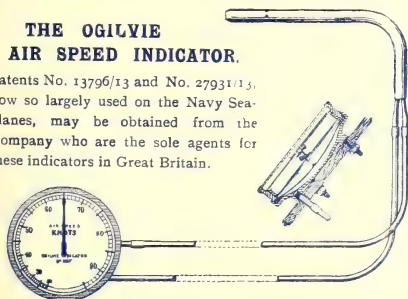
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WEDNESDAY, OCTOBER 20, 1915

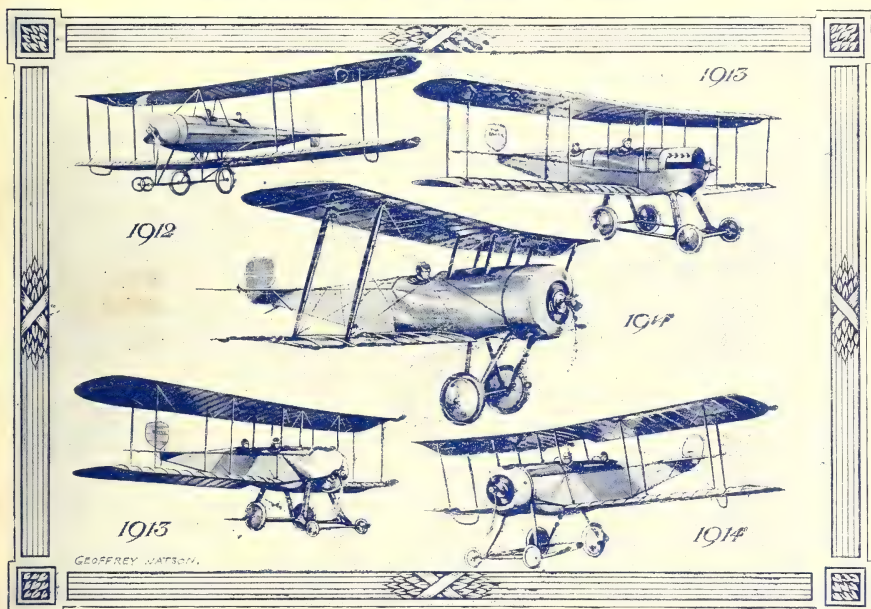
Edited by
C. G. Grey

Vol. IX. No. 16

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

MILESTONES—VIII (B).



THE DEVELOPMENT OF THE BRISTOL TRACTORS:—Late in 1912 came the round fuselaged tractor, with Gnome engine, designed by Mr. Gordon England for Turkey. In 1912-13 also came the biplane built onto the Military Trials monoplane type fuselage, also with a Gnome, designed by M. Coanda for Roumania. This was succeeded by the Renault-engine Coanda tractor in 1913. Following this came the 80 h.p. Gnome-engine scout, designed by Messrs. Barwell and Busted, which with Gnomes, le Rhones and Clergets has been one of the greatest successes of the war. Almost contemporary with it has been the two-seater Bristol, also fitted, as supplies served with Gnomes, Clergets or le Rhones.

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ON STUFFING THE PUBLIC.

A matter of twenty-five years or so ago, there flourished in a court off the lower end of Grafton Street, Dublin, a comic music-hall run by one Pat Kinsella—pronounced locally as Kinsh-la. Its audience was peculiar, consisting chiefly of soldiers, generally in the state specified by the Dublin Metropolitan Police as "having shrink taken," and of undergraduates of Trinity College. This was in the happy time before "Thrinity" had become the law-abiding seminary of to-day, and when we signified disapproval of the authorities by gas-pipe bombs in the Library Square, and wholly illegal bonfires in Botany Bay, and when an unpopular Fellow was "cruisted" out of Commons with loaves and fishes as projectiles,—not to mention potatoes in their jackets.

Pat, who has now joined his fathers, rest his soul, had his own way of handling his audience. For example, I have known him to stand on the little low stage with a porter-bottle in each hand defying the "stalls" to come across the foot-lights and eject a particularly unpopular turn. One night, Pat himself was performing a song and dance, when a youthful scion of a Tipperary family interrupted with booing and baaing. Pat looked down at him where he sat in the front row, and remarked, conversationally, "Eh! Be quite you, an' I'll feed y' in a minyute." A few moments later the booing and baaing began again, whereupon Pat, addressing the house at large, said appealingly, "For the Love o' Hivvin, will no one stuff a wad o' hay in that calf's mouth?"—If I remember rightly, the calf's own cap was used for the wad of hay by his immediate neighbours.

Somehow, the dope handed out last week to the English and American Press generally by the French Government apropos its "aerial Dreadnoughts" and "destroyers," and so forth, reminded me irresistibly of that wad of hay. One can appreciate the cynical humour of the official who gave the order that the Press should be permitted to see the latest marvels of the French Industry—with reservations—so that they might have something to chew over which would keep them and their readers quiet on other subjects. It is quite difficult to decide whether the English version in the "Times," or the American version in the "Globe" of the personally conducted tour round the "new fleet of armoured cannon-carrying aeroplanes" is the funnier.

The "monster battleplane," which was the "chief centre of attention," is, of course, the big triplane which, as everyone in the Services knows, as well as some thousands of people outside them, has been under construction for months. The Censor might object if I mentioned the name of "the engineer who constructed it"—vide American version—but from the fact that the French permit so much to be written about it, one may assume that they set no great store by its possible future performances, which are, presumably, shrewdly judged from its present ability, or inability, to do much in the air. The permitted description seems, in fact, to be merely a French counter to the German bluff of a "Kolossal" triplane reported via Basle or Berne some months ago, and, in both cases, one may pay

French and German military officials the compliment of assuming that they would not have let out so much unless they had something very much better up their sleeves.

How much the Press descriptions are worth may be judged from the fact that the "Times" correspondent talks of 70-foot span and a height of 20 feet, whereas the American version guesses at 130-foot span and 30 feet height. Both are probably wrong. The American version mentions that the conductors of the tour were Captain Lafargue and Lieut. Parul. One has a nasty suspicion that American ears failed to catch the names on introduction of M. le Capitaine Canard and M. le Lieutenant Tartuffe—if one is going in for mythology, one may as well do the thing properly.

THAT HOLLOW FEELING.

Seriously, though, it does make one savage—in the case of Service aviators, who need the best possible machines, it drives them almost to despair of their country—to see space in responsible papers devoted to such balderdash when it might be used for agitation in favour of better organisation of supplies, or to educating the public in the realities of Service aviation.

The "Times" man delivers himself of the statement that: "Built at a cost which is trifling compared with that of a Zeppelin the plane [triplane] has all the advantages of the latter, including that [sic] of stability, speed, relative carrying power [whatever that may mean] and endurance, and is infinitely less vulnerable. Hitherto nothing has been evolved in the field of aeronautics as significant as this new triplane." For concentrated nonsense that sentence would be hard to beat, apart from its grammar. Obviously the stability of the machine cannot approach that of an airship, its speed may be greater but it is doubtful, in carrying power in the sense of weight carried per horse-power the airship must have the advantage, and in endurance in the air without landing the airship is incomparably ahead.

No aeroplane which it is possible to build with the knowledge of aeronautical science at present existing could maintain itself in the air with a load of bombs worth dropping for a sufficient time to make the journeys which Zeppelins make every day and night. Otherwise our Flying Services would have retaliated long ago on German towns for the Zeppelin raids on this country, without waiting for a mandate from the British public stirred up by the "Globe" newspaper. It is an insult to the Services to suggest the contrary.

As to vulnerability, there is nothing much to choose. A well-placed shell will wreck either airship or aeroplane. On the other hand an unburst shell may go slap through an airship of the Zeppelin type without doing much harm, whereas a direct hit on an aeroplane, without the shell bursting, would almost inevitably wreck it.

COLOSSAL INSIGNIFICANCE.

To say that nothing as significant has been evolved

as this new triplane is not merely nonsense, it is a display of gross ignorance on the part of the correspondent who wrote the phrase, and of the editor who passed it. Mr. A. V. Roe's original triplane was at least as significant of what triplanes as such could do, the Sopwith "tabloid" biplane, with its phenomenal speed, and its ability to land slowly, did genuinely mark a new epoch in aeroplane design, the multiple-engined Shorts were a genuinely epoch-making idea, and the giant Martinsyde monoplanes built for the late Mr. Hamel's projected trans-Atlantic voyage marked another epoch in that they were the first really big aeroplanes to be constructed, though they have not yet flown. And just why neither of the Services has had them completed for trial as weight-carrying bomb-droppers passes my poor comprehension, for there are some thousands of pounds' worth of good timber and workmanship rotting in the sheds, and if they did not quite come up to expectations they would at any rate afford useful information when used experimentally.

Among minor foolishnesses evolved in chewing the official "wad of hay" one finds in the American version that "all the cruisers . . . carried both 3-inch cannon and rapid-fire mitrailleuses," and that "Captain Franz

and the operators Mondelli and Mallard made successive flights in battle cruisers, rising straight from the ground at an angle of sixty degrees."

Which is the companion statement to that in the "Times" describing—"A biplane with a spread of wing of 21 feet. . . . With a speed of 100 miles an hour. . . . In flexibility and ease of manoeuvre it surpasses all other types hitherto created. I saw an airplane rise almost perpendicularly from the ground to a height of 1,000 yards in 40 seconds."

Tabloid scouts carrying 3-inch guns and (or) climbing 3,000 feet or so in forty seconds would be quite useful instruments, and, indeed, of some significance, but neither yet exists. If a 3-inch gun were fired on a tabloid the recoil would either break it to bits or bring it to a standstill. The 4,500 feet a minute climber is also quite a long way off at present.

There is a lot more of the same kind of stuff, in both journals, but it is useless to waste more patience and paper over it. I can only hope I have said enough to appease the wrath of sundry Service aviators who have been thirsting for the blood of journalists generally since the nonsense which I have quoted was unloaded onto the public.

ON LESS SCIENCE AND MORE HOPS.

A PURE GAMBLE.

As has been said hereinbefore, British aeroplane constructors working under the most adverse circumstances have set the fashion to the world in certain types of machine. Mr. Roe's triplane and his two-seater biplanes showed new types. First the Sopwith, then the Bristol, and then the Martinsyde tabloids led all other countries in the small single-seater scouts. The Vickers gun-carriers were, and probably are still, the best things of their type and power—apart from certain others of the firm's products, which must not be talked about as yet. Mr. de Havilland, and then the late Mr. Busk, enabled the R.A.F. to turn out machines which, in their own ways, beat anything else of their type and power. Sopwith bat-boats—somehow curiously neglected—are the beginnings of the flying destroyers of the future. The big Short seaplanes are to-day unapproached by any other machine for real heavy sea work. And the big Wights have also marked distinct steps in seaplane progress.

In spite of all this, as I said recently, certain French machines are able to put up performances that our machines cannot touch, and French machines which the French authorities will not permit French aviators to use are gladly bought for our own Flying Services. It must be obvious to anyone, then, that there is something wrong somewhere.

The explanation is perfectly simple. It is merely that there is "too much science and not enough hops," as the old-fashioned brewer said about modern beer. Also, where the scientific staffs of both Services are concerned, one may apply the words which Mr. Kipling's friend, Hans Breitmann, applied to the restive orang-outang in the cage:—"Dot friend of ours haf sdill too much Ego in his Cosmos."

In other words, if one could get more practical common sense into these scientists and a little more self-conceit out of them, it would be possible again to produce aeroplanes in this country to beat the World. I can name two or three British aeroplanes at least which have beaten the world in the past, and against which not a single breakage in the air can be charged, which have been made into second-rate flying machines solely because of Government scientists piling on weight in order to provide what they are pleased to call "factors of safety."

What these people will not or have not the common sense to realise is that factors of safety are only a basis for bets against being killed by breakage in the air. Provide a strength-factor of 6 to 1, and the betting is 6 to 1 against the machine breaking. When the betting against breakage is raised to 10 to 1 or thereabouts, it increases the weight of the machine so much that it cannot climb, and so increases the chances of the pilot being shot. And, obviously, there can be little satisfaction in taking a 10 to 1 bet against being killed by breakage if it involves taking a bet of 5 to 1 on being shot. Most pilots would be perfectly happy to take on a 3 to 1 or 4 to 1 bet against breakage, if they could also take on 20 to 1 or 30 to 1 against being shot. And that means that a machine must be able to climb with ease and certainty to 14,000 or 15,000 feet, and that it must be able to get up from 1,000 feet to 6,000 feet in not more than 10 minutes, and in as much less as possible. Ten minutes in range of rifle ammunition is quite enough risk for any man to take at a time, and if he has to come down to 1,000 feet to drop bombs accurately, he must be permitted to get away quickly.

A MATHEMATICAL "CERT."

Where all these scientists go wrong is in their lack of practical knowledge. They go to work by consulting some engineer's handbook, like our dear old conservative friend Molesworth, and look up the figures given for the minimum tensile and other strengths of certain timber, allowing a percentage beyond that for bad quality wood. Then they work out their stress diagrams by empirical formulæ based on debatable figures gained from inconclusive experiments carried out by persons of doubtful reliability on instruments of problematic accuracy.

And so they come to the conclusion that spars which have never broken in the air, and have stood astonishing crashes on ground and water, can only have held together by the grace of St. Elijah, the patron saint of aviators. Consequently, the unfortunate constructor has to double the size of his spars, spoil the section of his wing, alter all his fittings, put up all his weight to match, and produce a machine which refuses to climb, fly, glide, or do anything worth doing.

But go to one of those scientists and ask him how the grain of spruce runs as compared with the grain of ash. Ask him whether the wood is heavier in the heart of the tree or at the outside. Ask him which way up the grain should stand in a spar or in a strut. You will find he is absolutely flummoxed—unless he has read these notes and has gone off to some experienced constructor to beg for the information so as to be ready for awkward questions.

Yet, getting the right wood from the right part of the log and putting the grain the right way up in the spar, will provide a factor of safety of perhaps 10 to 1 in a spar of a size which, according to the official formulæ, would have no factor of safety at all, or even a minus figure.

BATH-TUB SCIENCE.

It is just the same with float design for seaplanes. Elaborate experiments are tried as to head-resistance, and fore and aft and lateral stability of floats in Government tanks fitted with all sorts of pretty measuring instruments, and the stresses on the covering and framework are worked out by formulæ of dubious authenticity. Expensive floats are built to the scientists' designs—thus hanging up regular production—and are fitted to a seaplane which, with its own floats, gets off and flies like a duck. And, then, the confounded thing refuses to get off the water at all. After which, the maker is blamed for making a bad flying machine.

The successful seaplane maker pushes together a couple of box-pontoons of a type which experience has taught him will stand up to a battering sea. He puts them far enough apart to make the machine uncapsizable sideways, he puts them far enough forward to prevent the machine from standing on her head if she hits a sea in alighting. He puts on a tail float to prevent her from sitting down backwards. He puts in his own spars, his own wing section, his own everything else. And then he says to Officialdom: "There's my machine. Her performance is so and so. Take it or leave it." And that way you get the best possible aeroplane.

Unfortunately, however, there are things called "controlled factories," where the pseudo-scientists let their brain-waves loose to run wild and make hay of everything. These places may only build machines of types

designed or approved by the scientists. They are not allowed to build experimental machines of their own—for, of course, they might then beat the scientists' machines on performance, and how would the scientists justify their salaries if that were to happen? They may not move hand or foot without official permission, and that permission can only be got by going through a whole chain of officials, starting with the local inspector—frequently a person devoid alike of knowledge, intelligence, or manners—and working up, or down, to the latest human miscalculating machine on a Government office stool—and every link in the chain means delay and inefficiency.

THE PLAIN AND SIMPLE REMEDY.

If the Authorities—irrespective of Service—want their aviators to do the best work, they must have the best machines, and there is only one way of getting those machines. Give the experienced aeroplane constructors a general idea of the types of machines needed—bomb-carriers, gun-machines, flying-boats, scouts, or what not. Tell them what engines they can have for the job. Tell them what performance is expected in the way of climb, speed, and load carried. *And then leave them alone.*

Let them submit stress diagrams, and let the Government scientists work them out. If the scientists' calculations do not agree with those of the designers, tell the scientists to guess again, and find their mistake.

If the present scientists do not like playing second fiddle, get rid of them, and engage another lot. I can supply a dozen as good, for the asking, at half the price in wages, let alone in what their mistakes have cost the Nation, and, in the case of the Navy, I can supply them from the non-commissioned ranks of the Navy itself.

Over and above this, the officer responsible for aircraft construction should hold a regular levee once a week, at which all constructors or designers engaged on Government work should be received and allowed to make any suggestions or state any grievances they may have. Thus it would be officially recognised that it is desirable to short-circuit all the intermediate officials, who at present hold on to their jobs by acting as insulators between authority and intelligence and practical experience.



An Escadrille in being. A group of the Allies' scouts ready for work.

Finally, there should be a meeting once a month, at least, between the officer commanding the whole R.N.A.S. or R.F.C., as the case may be, and the managers of those firms who have proved their ability to build effective aeroplanes. In this way, the needs of those on active service, and the demands of strategy and tactics on aircraft could be conveyed to the people most concerned in supplying those demands and needs,

and the possibility or impossibility of satisfying official requirements could be discussed informally and with much advantage to all parties. And this might, perhaps, be supplemented by a small committee of practical constructors, who would on occasion advise the Chiefs of the Flying Services. Thus and thus only shall we regain our lead over all other countries, friendly and unfriendly alike.—C. G. G.

REPRISALS WANTED—?

A meeting, organised by the "Globe," was held at Cannon Street Hotel, E.C., last Thursday to consider methods of putting a stop to Zeppelin raids. Owing, in no small degree, to the events of the previous night, there was a large attendance, presided over by Lord Willoughby de Broke.

One looked in vain, however, for the presence of any gentlemen who might have claimed to speak with any authority or technical knowledge on what is obviously a highly technical matter. It was, in fact, noticeable that several of the speakers avoided with eloquence the real points which the meeting had been called to discuss, and devoted their remarks to warfare in general, politics, the Censor, cotton, the metal market, and other subjects.

Mr. W. Joynton-Hicks, M.P., moved that the Government be called upon to put a stop to the Zeppelin raids by announcing that a systematic policy of reprisals upon German towns would be adopted. The audience cheered him wildly, hissed vigorously at the name of Winston Churchill—Heaven alone knows why—howled at the name of Haldane, and in other ways signified its hatred of the enemy and Government alike, and its desire for immediate and wholesale air raids into German territory by way of revenge.

A good deal of emphasis was laid on the fact that hitherto we had refrained from reprisals of this sort solely out of regard for humanity and the laws of war—at which officers in the Flying Services will doubtless smile. If we are in a position to retaliate it is probably being done, and if we are not, it is futile to attempt to scare the enemy with empty threats.

The second resolution was as follows:—"That this meeting, having regard to the great part which the Air Services are already playing in this war by land and sea, and to their yet much greater possibilities in the immediate future, urges the necessity of the speedy formation of a Ministry of the Air to take complete and independent charge of the naval and military forces of the country."

It was proposed by no less an aeronautical expert than the Editor of the "Globe," and seconded by a representative of the "Anti-German League," whatever that may be. Probably the proposer hardly intended to suggest so sweeping an alteration in the control of our entire Navy and Army as that indicated by the latter half of the resolution.

The mental calibre of the audience may be judged when it is recorded that, on several gentlemen voting against the proposal, there was a most extraordinary uproar. A rush was made in the direction of those individuals who had dared to express a rational opinion on a debatable question, and several gentlemen who had said nothing at all were ejected in such violent fashion that the police had to be called in. The Editor of THE AEROPLANE was not present, or he might have suffered a like fate.

After a really eloquent speech on the national crisis by the vicar of a London parish the crowd dispersed. At the front door stood a stout individual in a frock coat and silk hat, rattling a money-box. With him was another individual with a stentorian voice, who shouted, without ceasing, "Here's the man as has done more for his country than any other man in England by shutting up the German churches in London!" And the readers of the "Globe," still boiling with righteous indignation, showered coppers on him without question, and went home to tea.—D. W. T.

A WATCHMAN'S NOTES.

As seacraft paint and fit dummy masts and funnels, why should not those navigating in the thinner element? The spirit of deception is already abroad in the airs. Even of the superior Zeppelin tribe, one has got into a coat of a tint described by a horseman as by Service Grey out of Italian Military Green. Why not break up outlines and disguise distinguishing features? Some airships were not made mottled for lack of enough paint of a uniform colour.

A coat of certain shades of vermilion-red offers possibilities, I imagine, to judge purely by a flying vehicle I saw quite closely recently, with a fuselage of some shade akin to that of our identification mark. I was totally "floored" as to the section of this fuselage, though ideally situated and armed for observing such matters.

Though nothing could be easily added to the lighter than air vessels, a long tapering "trailing end" might be painted a pale sky-blue, while the rest of the envelope could be of some dark striking shade sufficient to put people out in a bad light. Dummy cars might be fitted, and even be useful as vertical fins.

As for the heavier than air machines faked wing-shapes might be almost expected among those of the Zanonia class, which lend themselves to sailing under false colours admirably. [It might upset stability a trifle.—Ed.]

Which reminds one of the signalling idea from Turin, of which no more has been heard. This consisted of covering a part of the fuselage with a workable Venetian blind, painted dark on one surface of the blind, and white on the other. When the dark side was shown, the "bus" appeared to have parted company with its tail. Of course, this depended for its effect on the colour of the rest of the fuselage.

Peace, according to some, is in the air. Another danger from above apparently. And a real danger to a nation like ours, addicted to unworlly generosity and sentiment. Luckily, we have matter-of-fact Allies, Latins some of them, with their heads well stuffed with "rosemary for remembrance" and bitter herbs. Peace must be a strong tree, not the weakly weed bearing the fruit called enmity. The soil from which it will grow has been too well watered and enriched for the planting of a rambler useful to cover up the ugly waste places only.—T. S. H.

THESE NEW LAWS.

The Defence of the Realm Regulations Consolidated are amended by an Order in Council which was published in the "London Gazette" of October 14th. Regulation 18 is now made expressly to apply to aircraft, so that it becomes an offence to "collect, record, publish, or communicate" any information about airships or aeroplanes or about their movements.

It seems that we shall have to consult our solicitors concerning the legality of collecting, recording, publishing, and communicating the "Milestones" which have appeared on the cover of THE AEROPLANE recently.

FOR PRISONERS IN GERMANY.

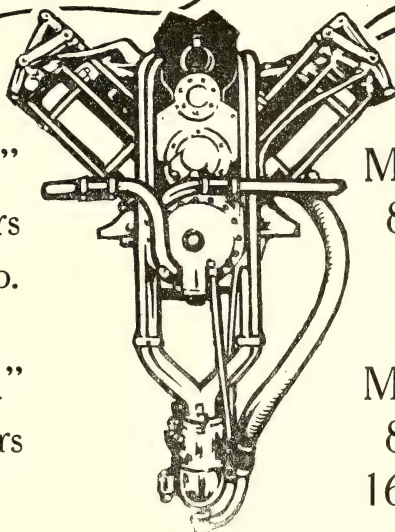
Muriel Viscountess Heimsley and Mrs. Rowton beg to acknowledge with thanks two further sums, amounting to £11 os. 3d., from employees of Vickers, Limited, Weybridge, towards their fund for prisoners of war in Germany.

Further contributions should be sent to 21, Upper Berkeley Street, W., and will be duly acknowledged in THE AEROPLANE.

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ERNEST S. H. LANDER, 1915.

Naval and Military Aeronautics.

From the "London Gazette," October 12th, 1915.

WAR OFFICE, October 12th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Comm.—Temp. Lieut. F. H. Cleaver, and to be temp. capt. whilst so employed. October 1st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: R. Newman, W. H. Furlonger. To be sec. lieuts. (on prob.). September 13th: W. J. King, F. S. Creswell, B. V. Grealy, C. St. Noble, R. Groves. September 14th. H. M. Fulton. September 20th. P. K. Turner. October 1st. D. S. C. Macaskie. October 2nd. October 4th: C. G. Hetherington, T. C. Wilson, R. A. Courtney. F. N. Grimwade. October 5th.

* * *

From the "London Gazette" Supplement, October 13th, 1915.

WAR OFFICE, October 13th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer: Lieut. E. W. H. Scotland, Unattd. List, N.Z. Mil. Forces. August 27th.

MEMORANDA.—Capt. A. E. Lewis, South African Def. Forces, to be temp. sec. lieut., for duty with Royal Flying Corps. October 1st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: G. S. Sansom, B. H. Radford.

* * *

From the "London Gazette" Supplement, October 14th, 1915.

WAR OFFICE, October 14th.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: B. W. J. H. Martin, C. W. Hill.

To be sec. lieuts. (on prob.): A. W. Cott, G. D. Hannay (September 20th); S. S. Nevill (September 22nd); V. F. F. Bryce (September 23rd); W. F. Rogers (October 15th).

* * *

From the "London Gazette," October 15th, 1915.

ADMIRALTY, October 8th.

ROYAL NAVAL AIR SERVICE.—Prob flight sub-lieuts. confirmed in rank of flight sub-lieut.: G. A. Cox. April 12th. J. S. Wheelwright. April 15th. C. H. W. Godfrey. May 2nd. H. de V. Leigh. May 6th. W. R. Mackenzie. July 10th.

Prob. flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service: J. E. M. Pritchard. May 24th. I. H. W. Barnato. June 13th. W. H. Oakley. June 15th. H. G. Ford. July 8th. M. Birkbeck. July 6th. B. A. Millard. July 11th. F. P. Reeves. July 18th. E. M. Morgan. July 19th. H. R. Simms. July 28th. A. M. Waistell. August 24th.

WAR OFFICE, October 15th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—September 28th: Capt. A. K. H. O'Brien, S.R., 2nd Dragoon Guards; Lieut. K. B. Harbord, R.A., and seconded; Lieut. R. Egerton, R. Irish F., and seconded; Temp. Lieut. M. Henderson, Seaforth H., T.F.; Temp. Sec. Lieut. R. P. Romer, R. Dublin F., and transd. to Gen. List; Sec. Lieut. R. S. Lucy, Worces., T.F.; Temp. Sec. Lieut. C. Danby, Rifle Brig., and transd. to Gen. List; Temp. Sec. Lieut. C. W. Palmer, Leics., and transd. to Gen. List; Sec. Lieut. N. Howarth, R. Lanc., S.R., and seconded; Sec. Lieut. B. W. J. H. Martin, S.R.; Sec. Lieut. C. W. Hill, S.R.; Sec. Lieut. H. G. Salmond, S.R.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. G. Salmond confirmed in rank.

To be sec. lieuts. (on prob.): A. C. Gilling. September 5th. M. Hodge. September 27th.

* * *

From the "London Gazette" Supplement, October 16th, 1915.

WAR OFFICE, October 16th.

REGULAR FORCES.—SPECIAL APPOINTMENTS.—Temp. Staff Lieuts.—Appts. of Qmr. and Hon. Lieut. W. J. D. Pryce, Royal Flying Corps, Military Wing, and Sec. Lieut. N. C. F. Francis, R.F.A., T.F., notified in "Gazette" of October 9th, are postdated to September 21st.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers. September 9th: Maj. B. F. Vernon Harcourt, Welch; Temp. Lieut. G. D. Gardner, York, T.F.; Temp. Sec. Lieut. C. B. Cooke, R.A., and to be transferred to Gen. List; Temp. Sec. Lieut. N. A. Bolton, R.A., and to be transferred to Gen. List; Sec. Lieut. J. C. Slessor, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): F. G. M. Williams. September 15th. S. Ransom. October 11th.

* * *

From the "London Gazette" Supplement, October 18th, 1915.

WAR OFFICE, October 18th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Asst. Equip. Os.: Sec. Lieut. L. A. McDougald, S.R. September 1st. Temp. Sec. Lieut. L. da C. Brawne-Lindon, 9th Res. Regt. of Cav., and transferred to Gen. List. September 7th. Temp. Lieut. W. W. Tullis, Norfolk, and transferred to Gen. List. September 13th. Sec. Lieut. H. S. Ebben, S.R. September 14th. Temp. Sec. Lieut. H. J. Murphy, Cheshire, and transferred to Gen. List. September 17th. Sec. Lieut. H. B. T. Childs, S.R. September 24th. Sec. Lieut. C. F. Pittman, S.R. September 25th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of V. M. Wenner to sec. lieut. in "Gazette" of October 9th cancelled as from October 13th.

* * *

NAVAL.

The following appointments were notified at the Admiralty on October 12th:—

ROYAL NAVAL AIR SERVICE.—Mr. J. D. Marvin entered as prob. flight sub-lieut., to date October 11th.

The undermentioned have been entered as prob. flight sub-lieuts. for temp. service, to date as stated: A. C. Harland, August 28th; C. H. Darley, B. S. Wemp, F. C. Henderson, T. G. M. Stevens, R. A. Courtneage, and G. S. Fleming, September 1st; H. J. Page, E. Potter, and G. K. Williams, September 3rd; A. S. Todd and G. D. Smith, September 6th; F. H. Toms, B. A. Trechmann, and L. M. B. Weil, October 11th; A. J. H. McColl, C. K. Studd, and G. C. C. Kilburn, October 17th.

* * *

The following appointments were notified at the Admiralty on October 13th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered the R.N.V.R., temporary, and appointed to the "President," additional, all to date October 12th: D. D. Walker as lieutenant, and C. G. More and E. C. W. Fitzherbert as sub-lieuts.

* * *

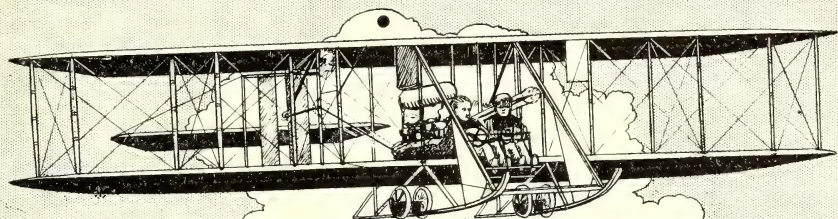
The following appointment was notified at the Admiralty on October 14th:—

ROYAL NAVAL AIR SERVICE.—Mr. R. Davies entered as prob. flight sub-lieut. for temp. service, to date October 13th.

* * *

The following appointments were notified at the Admiralty on October 15th:—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut. R. Souray, to the "Riviera," to date October 14th.



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Mr. I. G. Kelly entered as proby. flight sub-lieut. (temp.) and appointed to the "President II," additional, for R.N.A.S., to date October 14th.

The following appointment was notified at the Admiralty on October 18th:—

ROYAL NAVAL AIR SERVICE.—Flight Com. H. A. Williamson, to the "President," additional, for duty at the Air Department, Admiralty, temp., to date July 19th.

The "Court Circular," dated October 14th, 1915, notes that the following officers had the honour of being received by the King, when his Majesty invested them with the Insignia of Companions of the Orders into which they have been admitted:—

THE DISTINGUISHED SERVICE ORDER.—Squadron Commander S. D. A. Grey, Royal Naval Air Service; Squadron Commander A. W. Bigsforth, Royal Naval Air Service.

The Secretary of the Admiralty announced the following on October 12th:—

Previously reported Missing, now reported a Prisoner of War.

Flight Sub-Lieut. Richard C. Petter, R.N.

The Secretary of the Admiralty announced the following casualty on October 14th:—

SERIOUSLY INJURED.

Reported under date October 13th:—Flight Sub-Lieut. Grahame G. Dawson, R.N.

The following appeared on October 16th:—

WILSON—RATLIFF.—On October 14th, at St. John's Church, Blackheath, by the Rev. W. H. Jordan, M.A., Flight-Commander A. Corbett-Wilson, R.N., youngest son of Inspector of Machinery David Wilson, R.N., of Waterlooville, to Lucy, only daughter of the late George Cleophas Ratliff, of Coventry, and Mrs. Ratliff, of 26, Westcombe-park-road, Blackheath.

The following appeared in the birth's columns on October 19th:—

HAWKER.—On October 16th, at Elces, Chigwell, Essex, the wife of Flight Lieut. Arthur E. Hawker, R.N.—a son.

MILITARY.

The following casualty in the Canadian Contingent with the Expeditionary Force was reported on October 15th without date:—

MISSING.

Leeson, Lieut. D., 7th Canadian Infantry Bn., attached Royal Flying Corps.

The following casualty in the Expeditionary Force was reported on October 17th without date:—

MISSING.

Stubbs, Sec. Lieut. H. B., Royal Flying Corps.

It is reported that Mr. Idwal O. Griffith, M.A., formerly Fellow, and now Second Lieutenant, Royal Flying Corps, has been elected to an ordinary Fellowship at St. John's College, Oxford, for physical research, with special reference to aerial warfare.

There is distinct promise in having a man of action appointed to such a position instead of the usual theorist.

The relatives of the late Capt. Anketell Montray-Read have received a letter from the commanding officer of the Northamptonshire Regiment, stating that his name had been noted for the D.S.O. for duties very gallantly performed under heavy fire on August 28th, 29th and 31st, and that for devotion to duty and bravery on the day of his death his name had been submitted for the Victoria Cross. The C.O. adds that Captain Montray-Read was

"a splendid man, a most gallant soldier, and was admired and loved by all ranks. His loss is one of those which we shall never be able to replace."

It was reported on October 15th that two officers of the R.F.C., Capt. Arkwright and Lieut. Hardy, were killed between Glamis and Forfar on the morning of October 14th. They had flown from Montrose the previous day and had to land near Glamis Castle on Wednesday night owing to engine trouble. On the morning of October 14th a new propeller was fitted, and the two started on the return journey, Lieut. Hardy being the pilot. When about a mile from Glamis Castle they were flying low, and suddenly the aeroplane, according to the reports, "circled downwards." The aviators were killed instantly, being crushed under the machine.

The following appeared on October 16th:—

ARKWRIGHT.—On the 14th inst., killed while flying near Montrose, N.B., Captain F. G. A. Arkwright, 11th Hussars, attached to Royal Flying Corps, dearly loved second son of Frederic and Rebecca Arkwright, of Willersley, aged twenty-nine. Funeral at Comford, Monday, at three o'clock.

For King and Country.

HARDY.—On October 14th, near Forfar, N.B., whilst flying, on duty, Second Lieutenant Alan Herbert Hardy, Royal East Kent Mounted Rifles, attached Royal Flying Corps, youngest son of the late Charles Stewart Hardy, of Chilham Castle, and of Mrs. Hardy, in his twenty-sixth year. Funeral on Monday, at three o'clock, at Chilham.

Capt. Frederick George Alleyne Arkwright, 11th Hussars, attached R.F.C., was born in October, 1885, he entered the 11th Hussars in August, 1905, and his promotions were gazetted in November, 1906, and in August, 1914.

Captain Arkwright had been on duty at the front, where he was wounded some time ago, and since his return he had been learning to fly.

Second Lieut. Alan Herbert Hardy, Royal East Kent Yeomanry, attached R.F.C., was gazetted second lieutenant in the Royal East Kent Yeomanry in September of last year. He was 25 years of age.

The following appeared on October 14th:—

CARVER—ASHTON.—On the 4th October, at the Military Hospital Chapel, Citadel, Cairo, by Capt. the Rev. G. D. Hepple, Lieut. Robin C. Carver, attd. Royal Flying Corps, youngest son of the late Henry Clifton Carver, of Wilmslow, and of Mrs. Carver, Alderley Edge, to Rose Caroline, third daughter of the late Charles Henry Ashton, and of Mrs. Ashton, The Grange, Ellesmere.

The following appeared on October 19th:—

RUTLEDGE—MANIFOLD.—On the 14th inst., at Ingram, Northumberland, by the Rev. R. F. Allgood, Captain Thomas Forster Rutledge, Royal Flying Corps, to Mildred Marian Manifold, daughter of Mr. and Mrs. W. T. Manifold, of Parrumbete, Victoria.

BURNETT.—On October 16th, at Falklands, Feltham, Middlesex, the wife of Captain C. S. Burnett, R.F.C., of a daughter.

FRANCE.

The communiqué of October 13th says:—

A squadron of nineteen aeroplanes dropped 140 bombs on the station of Bazancourt, where enemy movements had been reported.

Another squadron of eighteen aeroplanes bombarded the junction of Achiet-le-Grand, near Bapaume.

Other machines also bombarded the railway line near Warnerville.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The communiqué of October 14th says:—

A squadron of twenty aeroplanes to-day bombarded the station of Bazancourt, on the rear front of Champagne.

One of our aeroplanes brought down a German captive balloon, which collapsed south of Monthois.

An enemy aeroplane was brought down by one of ours north of the Aisne. It fell in the German lines north of Bucy-le-Long.

* * *

The communiqué of October 16th says:—

A squadron of aeroplanes to-day bombarded the Sablons station at Metz. Numerous hits were observed on the station itself and on a moving train, which had to stop. A pointsman's post was blown up.

* * *

The afternoon communiqué of October 17th says:—

Our aircraft bombarded, on the night of the 15th-16th, the German virtual centres of Mézières and Azou-dange and the station of Avricourt.

In the Dardanelles the first fortnight of October was calm. . . . Our aircraft successfully bombarded every day the various establishments and camps of the enemy. The evening communiqué of October 17th says:—

The Germans having again recently carried out aerial bombardments of English towns, and one of their aeroplanes yesterday having dropped two bombs on Nancy, a squadron of our aeroplanes to-day bombarded the town of Treves, on which thirty shells were dropped.

* * *

The "Echo de Paris" (October 14th) says that a Zepelin at 11 p.m. on the 13th flew over Château Thierry and dropped five bombs, which fell outside the town, killing no one and causing no damage. The raider escaped.

* * *

Messrs. Pilkington and Sons, glass manufacturers, St. Helens, have received the following message from Paris: "Our Maubeuge works chimney was destroyed by a Zepelin dashing into it. All the occupants of the airship were killed."

The following citations in recent orders of the day for the French Army refer to aviators:—

(1) *Cité à l'Ordre de l'Armée*.—Watt, Walter Oswald, Capitaine de l'Armée Australienne—Aviateur militaire à l'escadrille M.F. 44. Officier d'élite. Pilote d'une grande audace et d'un sang froid imperturbable. N'hésite pas à survoler les lignes ennemies à faible altitude chaque fois que les circonstances l'exigent. A effectué de nombreuses reconnaissances très périlleuses et a en son avion fréquemment atteint par des éclats d'obus. Le 20 juillet, 9, 23 et 24 Août, 9, 10, 11 Septembre. Blessé à la tête le 10 Août, a poursuivi sa reconnaissance avec le plus grand calme.

Translation:

Cited in Army Orders.—Watt, Walter Oswald, Captain in the Australian Army—Military Aviator of squadron M.F. 44. An officer of high merit. A pilot of great daring, and of imperturbable coolness. He does not hesitate to fly over the enemy's lines at low altitudes on every occasion whenever circumstances demand. He has completed many very perilous reconnaissances, and has frequently had his machine hit by bursting shells. Particularly on July 20th, August 9th, 23rd, and 24th, September 9th, 10th, and 11th. Wounded in the head on August 10th, he proceeded on his reconnaissance with the greatest calm.

(2) The following refers to the Sergeant-aviateur Charles Hubert, late of Hendon:—

Jeune pilote (militaire) d'une hardiesse et d'un courage éprouvé. A effectué de nombreuses reconnaissances dans des conditions particulièrement difficiles. A eu a plusieurs reprises son avion atteint par des éclats d'obus, en particulier le 25 Août dernier.

Translation:

A young military aviator of proved hardihood and courage. Has completed numerous reconnaissances under particularly difficult conditions. Has had his machine hit on several occasions by bursting shell, in particular on August 25th last.

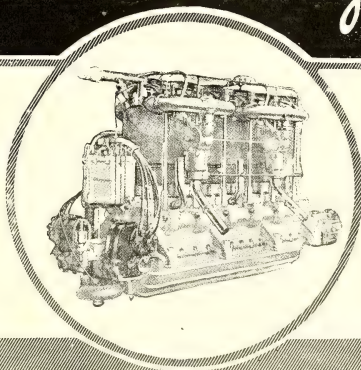


The photograph above was sent by a friend on active service with the single terse comment, "Rotten Landing."

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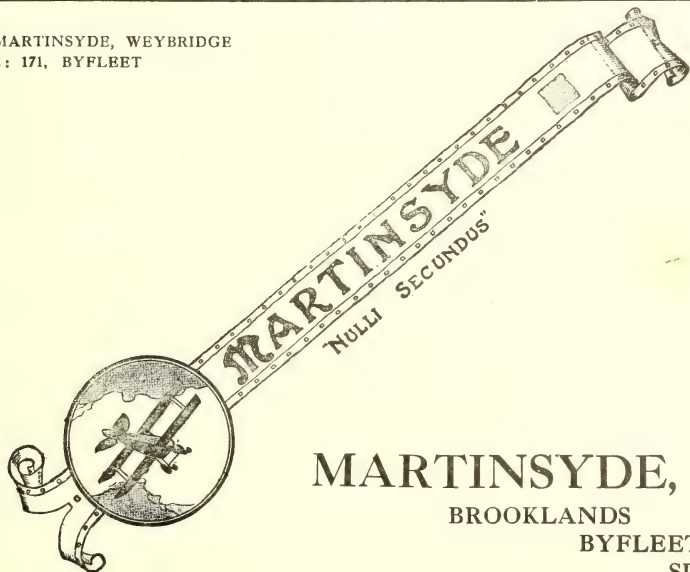
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GERMANY.

The communiqué of October 15th says:—

On the night of 13th-14th inst. one of our airships bombarded the railway stations at Chalons and Vitry-le-François, which are, from a military point of view, important for the prosecution of the enemy operations.

One of our airships freely bombarded the railway station at Minsk, where a considerable transportation of troops was going on. Five heavy explosions took place and a great fire was observed.

* * *

The naval communiqué of October 15th says:—

Our naval airships on the night of October 13th attacked London, important establishments in the environs, and the batteries at Ipswich. The City of London, which sustained several attacks, the London Docks, the waterworks at Hampton, near London, and Woolwich were lavishly bombarded with incendiary and explosive bombs. At all places great effects of the explosions and big fires were observed. In spite of vigorous counter-action, which began when the airships reached the coast, all the airships returned undamaged.

(Signed) Chief of the Admiralty Staff.

[Those in search of information as to the general direction in which German raids take place will always learn more from German communiqués than from the home-made article.—Ed.]

* * *

The communiqué of October 18th says:—

A German air squadron yesterday attacked the fortress of Belfort, drove away the enemy airmen, and dropped 80 bombs on the fortress, causing fires.

* * *

A message from Amsterdam, dated October 13th, says that Count Zeppelin has become a candidate for membership of the First Chamber of the Württemberg Diet, in place of Count von Zeppelin Aschhausen, who died recently. Count Zeppelin will undoubtedly be elected, and, judging by his pertinacity and ability in building up the Zeppelin Company, he should make an uncommonly good legislator.

* * *

It is reported from Copenhagen that the papers of Bremen, Wilhelmshafen, Kiel, Dantzic, and Hamburg, etc., describe the general aerial attack rehearsals, which were arranged in a number of coast towns at the beginning of the present week. For weeks previously the public had been prepared and minutely instructed by pamphlets, etc., how to behave under aerial attacks, but when the signal by church bells and gun-firing was suddenly sounded every pretence of calmness vanished. People flew, panic-stricken, into the streets, where the extinguished street lamps added to the horror, and, instead of hiding in cellars, in accordance with the police regulations, the people congregated in various open places or rushed to the military headquarters seeking protection.

At Bremen and Hamburg the signals were not heard in the outlying districts, and policemen on bicycles were despatched post-haste from house to house alarming the inhabitants and causing tremendous confusion. The newspapers warn the public to show greater self-possession on the next occasion.

[Just as well that the panic should occur during rehearsals, and so ensure that "it will be all right on the night," as the old theatrical tag has it. Incidentally the localities of the rehearsals show that the Germans expect retaliation from the sea, and not from places on land now occupied by British troops.—Ed.]

RUSSIA.

The communiqué of October 12th says:—

German aviators bombarded Dwinsk and the adjacent railway stations.

The communiqué of October 13th says:—

In the Riga region, east of Lake Babite, a German hydroaeroplane was captured.

German seaplanes flying over the Gulf of Riga were driven off by our destroyers.

In the Tukkum district a Russian Ilia Mourametz aeroplane threw some scores of bombs on an enemy transport and artillery column.

* * *

The communiqué of October 14th says:—

A German aeroplane dropped several bombs on the Remersh railway line north of Friedrichstadt.

On the night of the 12th a Zeppelin flew over the region of Dwinsk and dropped about 50 bombs. No one was injured.

* * *

The communiqué of October 16th says:—

Enemy aeroplanes again threw bombs on the station of Rotemershof, north of Friedrichstadt.

* * *

The communiqué of October 17th says:—

Our aeroplanes yesterday dropped several scores of bombs on trains and other material in the enemy's rear.

During the night of October 14th-15th a Zeppelin threw fifteen bombs on Minsk. Our artillery immediately drove the Zeppelin off.

* * *

The Petersburg correspondent of the "Morning Post" says:—

"Aerial warfare is on the increase in these regions. The Germans have erected Zeppelin hangars at Kowno, and aeroplanes are already busy in considerable numbers dropping bombs. The Russians, however, have lately improved and largely added to their flotilla of Sikorski double-body monster aeroplanes, and the Germans have no clear field before them in the air any more than on or below the ground."

[A "double-body" Sikorski is something new, but as it is only reported on the authority of a correspondent it may not exist. The usual tag of brag may be noted.—Ed.]

* * *

The following remarks are due to the message sent by Petersburg correspondent of the "Morning Post" on October 15th:—

"Over the whole region north of Dwinsk there has lately been great activity in aerial warfare, and this phase of the conflict continues to develop."

[See communiqués for details to avoid the correspondent's verbosity.—Ed.]

"This increased activity in aerial warfare is due to the use of the new German aeroplanes which I recently described. Their range and carrying power are very much greater than those of ordinary aeroplanes, and, in fact, they have evidently been designed to cope with the famous Russian Sikorski planes."

[Which seems to be rather stretching facts to extract a compliment for the Sikorski.—Ed.]

"There is one use of these wide-range aeroplanes to which special attention should be called now that the frontiers of the belligerent countries are so carefully watched. In some countries these precautions were taken much too late to be of practical service against an enemy like Germany, who had thought out and prepared the minutest details of this war long beforehand. But extreme precaution on the frontiers certainly does hamper the freedom of correspondence between German headquarters and spies and agents in belligerent countries. The aeroplane service is being used to maintain this correspondence."

[This brilliant idea has evidently been cribbed from the German communiqué published last week, warning "occupied countries" against aeroplanes landing spies therein. Still, it is always hard to tell whether a com-

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muniqué of that kind is a statement of another country's action or a faked pretext for doing the same thing oneself—as in the case of mutual recriminations over gas attacks.—Ed.]

The same correspondent continues:—

"We have heard of apparently meaningless bad jokes being perpetrated even in England by aerial services. [Personally, I have regarded most of the R.F.C. jokes as distinctly good.—Ed.] Are they really jokes, or something by no means amusing? In Russia there is no doubt that these dropping jests are intended to pass off similar droppings that are not jests, though apparently equally meaningless. I will give two examples. Some time ago there was dropped at Dwinsk a package containing a five-ruble note and a scribbled message to the effect that the Germans begged the authorities to spend the money on brooms and to clean up a bit, as the Germans had been horrified at the filthy condition of Warsaw when they entered it. [Nasty, but quite funny.—Ed.] But about the same time there was dropped in Riga a package containing sugar and pieces of gold money of Russian coinage.

"What the first seemingly innocent jest might mean only the initiated friends of Germany know; but the second seems plain enough. Riga has a considerable population friendly to Germany, apart from the Germans and Russo-Germans belonging there. These gentry promptly began cornering sugar over Northern Russia and shipping it to Riga, where enormous stores were concealed. Flour was treated in the same way, perhaps on a similar hint of which we have not heard. The Russian authorities had their attention called to the inexplicable shortage of sugar and flour even in Petrograd. Investigation showed that Riga was, for a carefully evacuated town, most remarkably well provided with food supplies which could only have one destination—namely, the enemy." [The trouble with this chap is that he has far too subtle a mind, far too great an idea of his own cleverness, and no sense of humour at all.—Ed.]

ITALY.

The Rome correspondent of the "Echo de Paris" (October 18th) says:—"Recently King Victor Emmanuel was watching the firing of a battery on the Carso when an enemy aeroplane flew over the Italian troops, passing just over the spot where the Sovereign was standing. The officers accompanying the King begged him to leave, but the King reassured them with a smile and remained calmly where he was, witnessing with great interest an engagement which took place between Italian aeroplanes and the enemy aviator. The latter threw a number of bombs, some of which fell two hundred yards from the King. The heedlessness of danger shown by his Majesty is one of the great worries of General Cadorna, the Italian Commander-in-Chief."

* * *

Four bombs were dropped from an enemy plane on Rochette (Vicenza) on the 7th inst. This attack may be considered by some as a failure since in such affairs a miss and a mile are much the same, but it is becoming possible to write *proxime accessit* rather too frequently of the Austrians. If their luck were to turn some shifting is to be awaited.

So far one gleans that four to six bombs seem to be the limit of weight carried and that two machines are considered ample for mere "joy raids."

The last military bulletin announces that Captain Calderara, of the Escadrille Section, is transferred to the Dirigible Service, from which I believe he originally hailed.

From Cameri flying school a fatal accident is reported to have occurred on the 8th inst., when the Volunteer Peter Raineri, flying on a monoplane for his certificate, side-slipped. No blame seems to have been attached to anyone. While sympathising and regretting recent lamented incidents, it is important, I think, to bear in

mind that the percentage of such is really extraordinarily low, given the number of men under instruction.

Major Montù is in command of all the volunteer instruction schools, a post fitted for the employment of his well-known energy and unceasing activity.

Gabriele D'Annunzio has been seen with the "Observer" badge near Venice, whither he had come for a short time on leave from the front, where he won his spurs—or should it be spy-glasses?—T. S. HARVEY.

SERVIA.

The communiqué of October 9th says:—

According to supplementary information, enemy aeroplanes recently dropped bombs on four of our hospitals, although the Geneva Red Cross was plainly visible.

* * *

The communiqué of October 14th says:—

From further information to hand we learn that an enemy aviator threw four bombs on a hospital which visibly bore the sign of the Red Cross of Geneva.

* * *

It was reported from Nish on October 18th that a hostile air squadron has succeeded in blowing up a bridge near Vranje.

SWEDEN.

The Malmö correspondent of the "Stockholm Tidningen," October 14th, reports that a large airship of the Zeppelin type has been seen over the place where the Hamburg steamer "Arabia" stranded, and that it went off in a south-easterly direction.

It is reported that a Zeppelin has been seen above Swedish territory. The "Stockholm Tidningen" remarks that, though no official confirmation has been received, and although no rules respecting the neutrality of the air have been laid down, the Swedish law of September 7th, 1914, distinctly forbids foreign air traffic over Sweden and instructs the police and military authorities by all necessary means, even by violence, to prevent violation of the law.

SWITZERLAND.

It is reported that a foreign aviator, believed to be French, flew on October 17th over Swiss territory from Alsace to La Chaux de Fonds (Neuchâtel), where he threw bombs by which five persons were slightly injured. The Swiss authorities have opened an inquiry.

TURKEY.

The communiqué of October 13th says:—

On October 10th a hostile aeroplane making a reconnoitring flight in the region of El Arish (on the Egyptian frontier) was shot down. The aeroplane and aviators were captured.

CANADA.

The "Brandon Weekly Sun," of Ontario, Canada, prints a cablegram from England, dated September 21st, which reports the death of Flight Sub-Lieut. Hay, R.N., in an aeroplane accident at Hartley, Northumberland, England. The machine is said to have caught fire as the result of a bad fall, with fatal results to the pilot, who, it seems, was making his first flight in this country. The deceased officer was a native of Owen Sound, Ont., and apparently had had a certain amount of flying experience on the other side of the Atlantic.

* * *

It is reported that, during the coming sealing season, attempts will be made to increase the "bag" by the use of aeroplanes. These machines will chase off over the ice-packs till they discover a herd of seal, and on their return to the ships they will report their locality and indicate the most practicable channels through the ice. It is not stated whether it is intended to employ seaplanes to operate from open water, or land machines for use from the ice. The idea presents possibilities, but one pities the pilot who was caught in a sea fog over the ice hum-

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mocks. Also, it would never be safe to travel many minutes' journey from the ships, for fear of engine trouble and consequent starvation.

Efforts are being made in Winnipeg to establish a fund for the organisation of a military aviation school on charitable lines. People are invited to subscribe anything over a shilling for the instruction of nominees in flying as a prelude to their applying for commissions in the Flying Corps. The Department of Militia is said to have sanctioned the scheme.

U. S. A.

The following report was sent from New York on Wednesday, October 13th:—

"It is announced from Dayton, Ohio, that Mr. Orville Wright, the famous aeronaut, has sold his entire interest in the Wright Aeroplane Company to a New York syndicate for a sum of about £300,000.

"Mr. Wright's intention is to devote the whole of his time to aviation research. The purchasing syndicate will continue the manufacture of aeroplanes, and it is understood they will receive the first benefits of Mr. Wright's new inventions."

[There is a rumour current in this country that the purchasers are the financial group who are connected with the Curtiss Co. If this story be true it means that the Curtiss combination is the strongest organisation in the world concerned with aviation, as it will then control very powerful aeroplane patents as well as hydro-aeroplane patents. It will be interesting to see what developments this purchase will bring forth.—Ed.]

It is reported that on September 24th Sergeant William Ocher and Corporal Albert Smith, attached to the United States Army Aviation Corps at North Island, San Diego, made fifteen loops each while engaged in flights which were said to shatter all Army and Navy aviation records. Both officers used the same machine, equipped with a 90-h.p. motor. This machine is of the heavy army type, designed solely for long distance flying.

[It would not be without interest to know whether the colour of Sergeant Ocher's complexion belied his name when he had completed his strenuous performance. Looping is a bilious exercise.—Ed.]

GOLD COAST.

The Government of the Gold Coast has received from the Aborigines' Rights Protection Society a sum of £1,500, which has been subscribed locally for the purchase of an aeroplane, to be presented to the Royal Flying Corps. This aeroplane will be inscribed "Gold Coast Aborigines."—Poor Pilot!



The Senior Service.—Sketched by a member thereof.

FOR EXAMPLE.

The following letter, which it gives one great pleasure to publish, is from one of the gentlemen whose name was used by the self-styled "Aeronautical Institute" as proof that it has the support of influential men of affairs. Mr. Wrench very clearly shows that the promoters of the scheme have used the names of prominent men as a bait without consulting the owners of those names:—

"My dear Sir,—My attention has been drawn to a paragraph which appeared on page 403 of your issue of October 6th, to which I take the strongest exception, and I think in fairness to me you should remove any misconception which might have arisen in your readers' minds from your remarks.

"(1) I know nothing about aeronautics and still less of the proposed scheme to which your leading article refers. All that happened was I received an invitation to be present at a meeting to which I replied I would endeavour to be there if I could, but at the last moment I was prevented.

"(2) My connection with the picture postcard industry seems to me entirely beside the point.

"As regards the idea of an Imperial Aircraft Flotilla, which is my own idea, and which has enabled the Over-Seas Club to present 34 aeroplanes to the Royal Flying Corps, it may interest you to know that we are merely trustees for the money—all the money we receive we pass on to the War Office. It is for them to purchase the type of aeroplane which they require.

"I am not interested in the coming aeroplane boom, and, in fairness to me, would you state that my connection with the Over-Seas Club is an entirely honorary one? If there is any further information I can give you I shall be pleased to do so.—Yours very truly,

"(Signed), E. WRENCH,
"Hon. Secretary and Organiser."

[Mr. Wrench's connection with the picture postcard industry was merely cited to show that even an astute business man might be used by others to their own advantage in connection with a new industry with which he was at the time unacquainted. As a matter of fact, Mr. Wrench's undoubted business acumen might very well be usefully employed in the aircraft industry, business methods and habits having been somewhat uncommon in the trade until comparatively recently.—C. G. G.]

The following "communiqué" has been received from the self-instituted "Aeronautical Institute":—

"The Organising Secretary presents his compliments to the Editor and would be much obliged for a notice on the work of co-ordination to be undertaken by the institute and concerning which a special diagram is herewith enclosed.

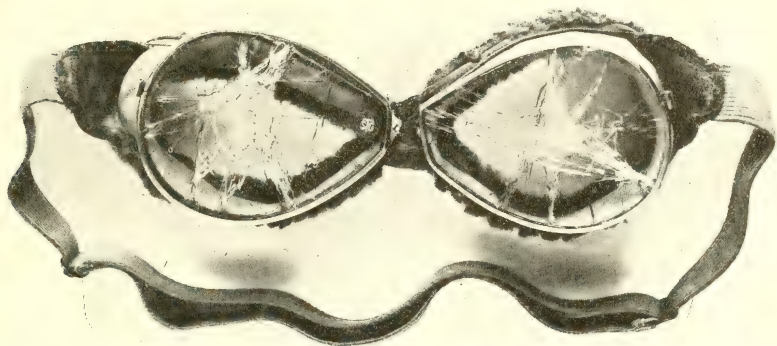
"It is important to note that the institute, aiming especially at co-ordination, will not undertake any work within the sphere of existing bodies unless, for any reasons, such bodies are unable to execute such work as should, from the national point of view, be carried through in the present crisis."

[It may be of interest to note that letters from this "Self-Institute" are signed with the name of "Grun," a cognomen of Teutonic aspect which has not appeared in any of the "Self-Institute's" public announcements. Further, it appears from the latter of the paragraphs which appear above that the "Self-Institute's" latest idea is to poach on the preserves of the Royal Aero Club and of the Aeronautical Society while the active members of those established and trustworthy institutions are busy in the country's service. One may therefore repeat the warning already given in this paper that those who have the welfare of aviation at heart would do well to fight shy of the "Self-Institute."—C. G. G.]

Mr. ALEX. J. M. GRAY has forwarded to us a letter from an Officer in the Royal Naval Air Service, who writes:—

9/10/15

"The goggles arrived safely to-day, and I want to thank you very much indeed for them. I needed them more than anything else, and as a matter of fact I was about to get some myself, because one of ours had a nasty crash last week and would have been blinded had it not been for the Triplex Goggles."



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THE INVASIONS OF ENGLAND.

The following notice was issued late on October 13th by the Press Bureau for publication on October 14th:—

The Press Bureau has received instructions from the Home Secretary to announce that a Zeppelin raid was made yesterday evening over a portion of the London area, when a certain number of incendiary and explosive bombs were dropped.

The material damage is small.

A few fires resulted, but they were quickly put out by the Fire Brigade.

The Admiralty will issue a statement to-day when particulars are available.

At present it is only possible to say that no public buildings were injured, and the casualties so far reported number two women, six men killed, and about thirty-four injured.

With the exception of one soldier killed, all of these were civilians.

These figures include all the casualties reported at 11.45 p.m. Wednesday, the 13th.

[The curious division of duty between the Home Office and the Admiralty should be noted. Merely as a side issue it would be interesting to know, from one department or the other, how many casualties are known to have been caused in this and other raids by our own projectiles returning to earth.—Ed.]

* * *

The following official notice was issued by the Press Bureau on October 14th:—

The War Office announcement is in the following terms:—

A fleet of hostile airships visited the Eastern Counties and a portion of the London area last (Wednesday) night and dropped bombs.

Anti-aircraft guns of the Royal Field Artillery attached to the Central Force were in action.

An airship was seen to heel over on its side and to drop to a lower altitude.

Five aeroplanes of the Royal Flying Corps went up, but owing to the atmospheric conditions only one aeroplane succeeded in locating an airship. This aeroplane, however, was unable to overhaul the airship before it was lost in the fog.

Some houses were damaged and several fires started, but no serious damage was caused to military material. All fires were soon got under by the Fire Brigade.

The following military casualties, in addition to the ones announced last (Wednesday) night, have been reported:—

Fourteen killed and 13 wounded.

The Home Office announce the following casualties (other than the military casualties reported above):—

	Men.	Women.	Children.	Total
Killed	27	9	5	41
Injured	64	30	7	101
	91	39	12	142

Of these casualties, 32 killed and 95 injured were in the London area, and these figures include those announced on Wednesday night.

* * *

An anonymous leader-writer in the "Times" is to be highly complimented on the following bitterly sarcastic article. It includes handsomely Government futilities and ignorant and interfering civilians who agitate for impossible retaliation. The Editor of THE AEROPLANE admits frankly that he could not have put the situation as well himself:—

"After the visit of the Zeppelins to 'the London district' and 'the Eastern Counties' early in September, we inquired who was responsible for the aerial defence of London. The instant sequel was that Admiral Sir Percy

Scott was made responsible; and Mr. Balfour admitted in the House of Commons a day or two later that behind Sir Percy Scott the Admiralty was responsible. At last, therefore, the public became aware that the Minister finally responsible in this matter was Mr. Balfour. Everybody was quite satisfied, and a great many people seemed to assume that the mere appointment of Sir Percy Scott would frighten the Zeppelins away for ever. On Wednesday night it was found that this pleasant assumption was premature. The Zeppelins came again, and they also got away.

"We waited for a reassuring announcement from Mr. Balfour. Instead, at ten minutes after midnight a brief statement came from the Press Bureau, issued on 'instructions from the Home Secretary,' Sir John Simon. No one seemed quite to know why Sir John Simon figured in the matter, unless indeed it was to prove the new alacrity of his Press Bureau. He was himself a little apologetic for his promptitude, for he explained that the Admiralty would issue a statement yesterday. But the Admiralty did nothing of the kind. It preserved a majestic silence.

"Last night we received two further statements, one from the War Office and one from the Home Office, both of which we publish to-day. What, therefore, has become of the Admiralty? And has there been a further delegation of responsibility? Another question arises in connection with this matter. Who is responsible for the aerial defence of that rapidly expanding area, 'the Eastern Counties'? Have the Government made any attempt to organise mobile defences against airships outside the metropolis? Where do Sir Percy Scott's responsibilities cease? And would it not be better to extend them?

"More than one locality has excellent reasons for making these inquiries, and much dissatisfaction is coming to light. It is clear, too, that there is growing sympathy with the plea advanced at yesterday's public meeting for organised reprisals by aeroplanes upon German cities.

"The visit of the Zeppelins was so nicely timed that it imparted additional warmth to speeches on which our own conclusion can be very briefly stated. The question of reprisals is entirely one of relative military advantage. Our aeroplanes must be employed wherever they can do most damage to the German cause."

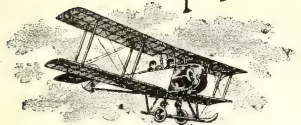
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An inquest was held on October 16th on various victims of the air raid of the night of October 13th. In one district it was stated that seventeen bombs were dropped by one Zeppelin. Nearly all exploded.

The Coroner, who must remain nameless, as his name might give away the district in which the bombs fell, in opening the inquiry, made the most sensible speech which has yet been delivered on the subject of Zeppelin raids. He said that were certain affairs given a little more publicity, he was sure a great feeling of gratitude would be aroused and a greater sense of safety produced. He warned the jury against preparing ridiculous verdicts of the kind which other Coroners had had to reject; there was no reason to follow the bad precedent of a verdict of wilful murder against the German Emperor. These sad occurrences, he was sure, would reconcile shop-keepers to the stringent lighting regulations. He hoped, too, that the full realisation of peril engendered would result in a further large addition to the ranks of the defenders of the Empire. The cases of death from shock should teach all alike a lesson—that those at home, amid Zeppelin dangers, should endeavour to cultivate something of the cool, calm courage of the men in the field, and a resolute and unyielding determination not to give way to any panic.

The cases included a surveyor who died of shock while dressing; a Belgian widow who died of shock in a basement; three boys aged 10, 14, and 15, killed by a smashed building; the wife, son and daughter of a sergeant-major on active service, killed by a smashed building; a dress-

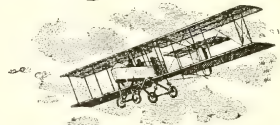
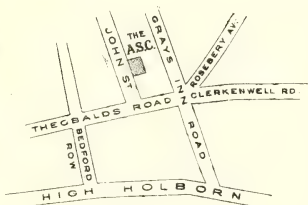
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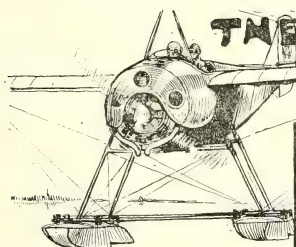
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maker's assistant, aged 50, killed by a bomb when entering a cellar; a grocer's assistant who was killed by a bomb after running out into the street, the rest of his household who stayed at home escaping; an electrician's assistant, also killed through running out into the street; a taxi-driver, killed by shrapnel; a chemist who died of shock on his way home.

* * *

A writer appointed by the Home Office published on October 18th a description of some of the effects of the recent raids in the London area. The description is less graphic than was the one published recently. The following extracts exemplify the ineptitude of the official:—

"The enemy's vessel or vessels flew high at an altitude chosen, no doubt, in order to prevent as far as possible the danger of damage or destruction from anti-aircraft guns. The darkening of the Metropolitan area, together with the height at which the aircraft travelled, certainly prevented the enemy from discovering the exact position of places of importance."

The former sentence is a foolish platitude and the latter is pure assumption. The next extract is only partially true, for there were plenty of badly scared people about.

"In the theatres, from which the sounds of firing and of explosions could plainly be heard, there was a commendable absence of panic. Altogether, the imperturbability of the people of London would appear to offer a striking contrast to the behaviour of the population on the occasion of the 'rehearsals' of aircraft attacks recently said to have been held in certain German towns."

The jibe at the end is very cheap and entirely unworthy of a Government official charged with so important a task. If the appointees of this Government cannot be either efficient, effective, or accurate, they might at least try to be dignified.

* * *

The raid appears, *inter alia*, to have generated a phenomenal number of brain storms, chiefly with the idea of strafing the invaders or making reprisals on the people that begat them. An unusually brilliant effort has been made by a reader of this paper who suggests that an immense number of small balloons be prepared, dragging three or four fine wires each fifty yards or so in length, the wires to be magnetised. Balloons of a larger size might carry contact bombs. The idea is that when a raid is imminent thousands of the balloons should be liberated over London in the hopes that some of them would be drawn into the Zeppelins' propellers, with disastrous results to those harmless but necessary appendages!

Another reader wishes us to assure his friends that Zeppelins are not a mile long and that they cannot attain an altitude of ten miles! Actually a Zeppelin is about 500 feet long and its maximum altitude 8000-10,000 feet. Such airships weigh 25-30 tons, and their useful load after allowing for crew and fuel is anything between one and two tons, but nearer one.

* * *

This latest raid was received with varied feelings by different people, their views being chiefly determined by the circumstances under which the raiders caught their victims. For instance, the feelings of a Special Constable who was unearthened by the dispatch rider from the comforts of a hot bath were no more charitable than those of the gentleman who had to walk home because his car had been strafed as it stood on a street rank.

The proprietor of a nocturnal coffee-stall who placarded his booth with a notice reading, "Don't stand out in the cold watching Zeppelins, but come inside and have a good blow-out," deserves to succeed in the world.

One embryo scientist, whose potentialities ought to be investigated by the W.P.L., announced to an audience of admirers that the fact that one of the Zeppelins was visible was due to the luminous gas it contained. A second wiseacre said that it was foolish to fire at the air-

ship because it was more than three miles high, while a third made the very interesting statement that the Zeppelins did not require petrol to take them back to Germany as the crew could extract sufficient "essence" from the exhaust to keep the engines running. The story is slightly suggestive of the residue of an Anglo-French joke.

A more practical woman summed up the situation by saying, "These Zeps ought not to be allowed!"

* * *

The occupant of "The Office Window" in the "Chronicle" says:—"If you have seen a Zeppelin you have doubtless given vivid descriptions of it to the unlucky who were in bed or down in the Tube. What did you liken it to? The individual's fancy seems inclined to play round the familiar objects of his own trade. 'A silver pencil,' said a writer who had seen the thing from a distance. But he owned himself beaten when he heard the local greengrocer next day describing it as 'just like a threepenny marrow.'"

* * *

An instance of how German frightfulness affects our young folks may be told. The small son of a near neighbour was asleep in his bed when the first air battle began last week. His parents thought it would be well to remove him to their own bed. He awoke during the process of removal, and asked what was the matter. He was told that the Zeppelins had come. He replied: "If they have, that's no reason why I should warn someone else's bed."

* * *

A correspondent sent to the "Star" the following, which was overheard outside a public-house during the Zeppelin raid:—

Elderly Woman: "Oh, Bill, I shall 'ave to 'ave a drop o' brandy."

Bill: "All right, old girl; but yer'll 'ave to pay for it yerself—I musn't treat yer!"

The correspondent adds that this story is "absolutely true."

* * *

The latest unconscious humour of the police is to go and strafe houses in which the Venetian blinds are turned down so that they show the internal lighting in the street. The householders consequently turn them up, so that the light shows without interruption to the sky. But the police cannot see it from the ground, so all is peace.

* * *

A correspondent suggests that if the Zeppelins *must* give two shows a night, they need not insist on such a long interval between them.

* * *

The inhabitants of a certain district of — are mightily pleased with the new gun installed there. It has the biggest bark yet heard, and it leads them to hope that if in future they are made the recipients of the residual products from guns in a diametrically opposite district of — they may have the satisfaction of hearing that their district has hit back.

* * *

A dear old lady was apprehensive that the bright light of a 10 days' old moon would enable the skippers of marauding Zepps to select their targets with too great ease for the general satisfaction of those below them. So to allay her fears, the wife of an officer in the R.N.A.S.—presumably with inside knowledge of "events that cast their shadows before"—gravely explained the operation of a huge searchlight that is to be fixed to the top of the Nelson column in Trafalgar Square, and which, by the aid of a dull black reflector, will cast a heavy shadow across the face of the moon; and so render her beams innocuous!

* * *

A story worth telling relates to the last Zeppelin raid on London. A well-meaning ratepayer got out his rook

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rifle and blazed away at the intruder, whereupon an equally well-meaning neighbour laid an information against him with the police, accusing him of communicating with the enemy. It took some time for the rifleman to clear his character.

Apocryphal little firearms, in the early part of the war a German aeroplane came over an R.F.C. camp, and an air-mechanic, glad to have an opportunity of testing his service revolver, of whose potentialities he knew but little, opened rapid fire on the oncomer. Feeling that the bullets might be falling short, he exhibited considerable ingenuity by standing upon a petrol-can to increase the height of his trajectory. Unfortunately, the depression in the side of the can caused by his weight made the scheme ineffectual.

BITS ABOUT ZEPPELINS.

From "Books of To-Day and To-Morrow," via the "Express."

"Zeppelins are apparently very vulnerable and easily brought down. We have it on good authority that no less than eleven are at present lying on various commons and waste lands in 'the London district.'"

"Zeppelins always fly right over other people's houses, and invariably so low that the occupants could (if so minded) have touched them 'with an umbrella.'"

"The number of bombs dropped by a single Zeppelin is about 7,000. Everybody knows somebody who has a 'hole in the back garden big enough to take two (or sometimes three) motor-cars.'"

"The special constable who, on seeing Lord Haldane's figure looming through the darkness, raised a cry of 'Zeppelins!' and rang up the fire brigade, has been severely censured."

"Those who have never been in a Zeppelin," says one of our brilliant thinkers, "can have no idea of what it is like." Jonah, it is said, made a very similar remark when he came out of the whale.

A writer in the "Neue Freie Presse" of Vienna declares that the Zeppelins really have "so affected intellectual London" that "Shaw is silent, Granville Barker has fled to America, and H. G. Wells has written a novel which, compared with his previous work, is miserably poor."

A BALLAD OF ZEPPELINS.

Ten little Zeppelins crossing o'er the Rhine;

One was hit by "seventy-fives," then there were nine.

Nine little Zeppelins on the "morning hate";

One burst itself with rage, then there were eight.

Eight little Zeppelins soaring up to heaven;

One got weighted down with snow, then there were seven.

Seven little Zeppelins in a sorry fix

Mixed up in a thunderstorm, then there were six.

Six little Zeppelins in Belgium did arrive,

One met an aeroplane, then there were five.

Five little Zeppelins made for Britain's shore;

One was bombed from the clouds, then there were four.

Four little Zeppelins put out across the sea,

One got off its proper course, then there were three.

Three little Zeppelins across the ocean flew,

One met a seaplane scout, then there were two.

Two little Zeppelins to play the "frightful Hun,"

Spotted by a coast patrol, then there was one.

One little Zeppelin turned tail to run,

Chased by a waterplane, then there were none.

[Unfortunately our poet is a trifle premature, as yet.—Ed.]

NOVA SCOTIA.

Advices from Nova Scotia state that the Halifax branch of the committee of the Overseas Club have ordered an armoured biplane at a cost of £2,250, which will be presented to the War Office for the Royal Flying Corps, and called "Nova Scotia."

FROM DENMARK.

THE AEROPLANE'S Danish correspondent writes:—

Contrary to the general German reports of the failure of Russian aircraft in the war, one F. R. Behrends writes a Feldpost letter to the following effect: "Russian aviators are more numerous than is ordinary imagined. Every day the Russian airmen hum on most various points of our Eastern front. In Galizia they patrol as curious over our trenches as they are on their outlook for batteries in Poland and Kurland. Well, they do not even stand behind their French confrères in dropping bombs on peaceful cities and fire on important etaps and stores far into the country of the enemy. East Prussia experiences the always less comfortable spirit of the Upper Rhine on certain days . . . pricks with needles, yet pricks. The frontier city of Willenberg saw, and still sees, more Russian eggs fall from the sky than it can sober bear with; Soldaw, Ortelsburg, Insterburg know of the same taste."

"The Russian aeroplanes that I saw looked to be good material. That is, Russia, the country of the imported culture, owns, as must be, only few products of her own. The prondness of the Czar, is Sikorsky. The giant biplanes, which the war brought before my eyes, were considerably more elegant and refined than 'Grand.' Still, there is something clumsy associated with the manoeuvring of the flying elephant even in 1915; in return, it transports more men and a big number of bombs. Nine to twelve shots fly quick as the flash down by every drop. The quickness was surprising. Quick was too the whole flight of the Sikorsky. The engine rests a riddle to me. At any rate, the engines' noise did betray German Argus engines no longer. Very like air-cooled motors rotated, yet if Gnome I will not swear."

"Sikorsky remained the only true Russian aeroplanes I observed. As French 'Liebesgaben' Farman and Voisin biplanes made good. Unfortunately I could gain no further particulars of various American double-deckers, which the Germans are told to have brought down. The special Wright planes were not to be seen."

"In Kurland the German officers know of no reliable mark for aeroplanes, if enemy or friendly ones. When biplanes, well, then you must wait for bombs and signal bullets. But if a monoplane appears at the horizon, then you can bet one to a hundred that it is a Russian. Whether Germans or Russians are in the air, is Albatros or Deperdussin. The Russian Deperdussins are likely to be the best aerial weapon of our enemy. How far they differ from the French original in details can only difficult be learned. They possess all the advantages of this little racer. Being difficult to hit owing to their small size, they attain for military aeroplanes surprising speed and carry out daring bankings and nose-dives. Short ago anti-aircraft gunners fired on a Deperdussin monoplane, 87 shots flying round the Russian in one quarter of an hour. The left wing came into flames, the aeroplane turning at once to the side, burning, with a speed of 150 kilometres in the hour. It was to be seen still burning in the air for twenty kilometres."

"In the West ordnance officers go round who have shot down two or more French aviators without being recognised. On the Eastern theatre of war a commander of an anti-aircraft train received the Iron Cross from the general for damaging a Russian aeroplane without bringing it down. Indeed, the importance corresponds with offers and chances. But that aircraft, even by the enemy, represents such high worth, speaks volumes for the technique, the culture of the twentieth century."

[The first sentence of this paragraph does not mean that German spies shoot French aviators without being caught, but merely that prophets are without honour in the West, and are honoured too much in the East. It is interesting to see that German aviators have their grumbles as well as British.—Ed.]

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CONVERSATION IN THE AIR.

One of the somewhat important details of aerial work which have not been satisfactorily dealt with is that concerning conversation in the air between pilot and passenger. The writer has recently been privileged to test the "Aerophone," designed and patented by an American, Mr. L. G. Hammer, of the Mears Ear Phone Co., 493, Regent Street, W., which appears to solve all difficulties satisfactorily.

The following extracts from Mr. Hammer's specification describe the instrument simply and fully :—

"This invention relates to means or appliances for carrying on or establishing oral communication between the pilot and a passenger, or an observer, on an aeroplane, airship, and like craft while in flight. In aeroplanes, when in flight, the noise is so intense, owing to the working of the engine, and to the rush of air, that it is practically impossible for the pilot and the passenger, or the observer, to converse or communicate verbally with one another even by shouting at the top of their voice. Now the object of my invention is to remedy this inconvenience by providing means whereby it shall be possible for the pilot to converse or communicate readily and audibly with the passenger or observer, or vice-versa.

"To this end my improved appliance or means comprises two telephone or microphone transmitters and two receivers, one such transmitter and receiver being worn by the pilot, the other transmitter and receiver being worn by the passenger or observer. The transmitters and receivers are in each case held to the ear and mouth both of the pilot and of the passenger or observer by means of a specially constructed headband, or cage, to which they are adjustably fixed. The transmitter of the pilot's instrument is connected in series with the receiver of the passenger's or observer's instrument, or vice-versa; while the transmitter of the passenger's or observer's instrument is connected in series with the pilot's receiver or vice-versa.

"The receiver is provided with a switch adjustable to either four or eight different degrees of strength. [To suit different ability for hearing.—Ed.]

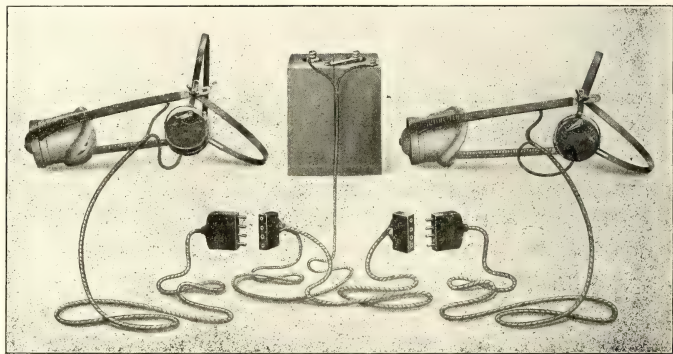
"Secured to any suitable part of the craft and between the pilot's seat and that for the passenger or observer extends a conducting wire or cord at each end of which is fitted a socket adapted to receive a plug carrying, say, four terminals, and said conducting wire or cord and socket are inserted with the battery. From the plugs pass conducting wires to the transmitters and receivers. The conducting wire or cord sockets, plugs and battery may be fixtures on the craft, but the transmitters and receivers together, with their leads or connections, can be readily detached by withdrawing the plugs.

"The head band, or cage, comprises three main members, one of which passes over the top of the wearer's head, another round the back of the head, and a third, the longest member, projects forward and carries the transmitter and the mouth-piece. These three members are slotted and are pivoted at the ends, and they are held in position by means of winged nuts or screws. The object of this pivotal arrangement is to allow for adjustment of the transmitter and the mouthpiece nearer to or further from the mouth of the user. A fourth member, or arm,

carrying a yoke, is provided, and the said yoke is pivotally attached to the arm and also to the receiver, in order to allow of the face of the receiver being held close up against the ear. It is to be understood that both the pilot and the passenger, or observer, are each provided with a head band. Detachably connected with the transmitter is the mouthpiece, which forms at the same time a collector or concentrator for the voice and an excluder of extraneous noise. This mouthpiece . . . is made of celluloid . . . and is preferably of truncated conical form or of bell form. It is provided round its base with a pneumatic ring or soft cushion, to prevent injury to the wearer's face in case of shock, jolt, or accident, and it fits closely around the mouth so as to prevent egress of the voice and ingress of outside noise. . . . The transmitter is furnished with a device for damping vibration from sound waves."

The instrument has been thoroughly tested by several Service pilots, who have reported on it very favourably, but curiously enough it has not been adopted for war use.

In connection with Mr. Hammer's invention, an incident occurred not long ago which is not without humour, even



The Aeroplane set, showing the head-band with single ear-piece, muffled mouth-piece, the battery, and disconnector plugs

if it does not increase one's respect for the daily Press of this country.

On August 20th, the "Daily Mail" published an article by Mr. Ralph Pulitzer, of the "New York World," describing a flight in a twin-engined Caudron. In the course of the article describing how the pilot tried to communicate with the passenger, Mr. Pulitzer wrote: "I could see he was shouting at me but could not hear the faintest sound over the roar of the propellers."

Next day a correspondent, signing the initials "P.D.," drew attention to this lack of communication and another matter, and his letter was published under the heading, "Two flying improvements wanted." In due course Mr. Hammer wrote to the "Mail" pointing out that he was ready to supply one of the "improvements" needed.

In reply he received a letter, dated September 24th, signed, "Wareham Smith, Advertisement Director," saying, "With reference to yours of the 21st, I am informed that the Editor is unable to deal with the matter in his columns. I would suggest that you could arouse considerable public attention to your invention by a plain statement of it in our advertisement columns, say in a space of half double column, and we should be pleased to write the copy for you should you so desire. The cost would be £55 inclusive."

This from "The Paper which Developed Airmanship," as it calls itself, is distinctly funny.

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BY GEOFFREY de HOLDEN-STONE.

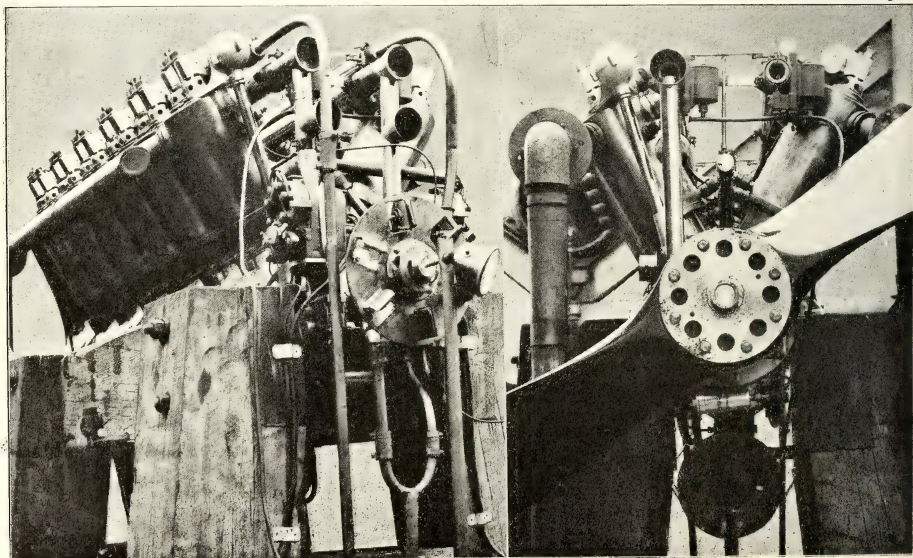
Specially interesting, too, is the distribution system of the lubrication; its design, the most thorough example of Italian treatment—which is mainly ingenious simplifying—that I have ever seen in a British motor. Now, unless the force-feed pump is internal, after the fashion of Delaunay-Belleville, De Dion, and some Italian examples, such as the Züst—getting the oil into the crank-shaft and thence to the bearings, etc., is always a problem. Though I admit having found a way of making a certain part of the crank-shaft itself, also part of the pump; quite simply and effectively—so much so that the pressure would probably wreck the motor if the rest of the device did not fit anyhow and leak—and, incidentally, unbreakably. But in the ordinary way apart from such freak originalities, an internal pump is none too accessible if anything should go wrong with its just-so mechanism. The more direct and appropriate way for an aeromotor is to have the pump external; when the immediate problem is how to do without piping. As I pointed out recently, the obvious way is to bore or otherwise run your main distribution conduit through the metal of the crank-chamber lengthwise, and to drill branches across and diagonally through any webs there may be, and so to the housing of the journal brasses. In the Green system, however, the first part of this is done as indicated, but the branch supply is arranged much more easily, and not less effectively. The vertical holes for the cylinder and journal supporting bolts are there, anyway, duly drilled through the crank-chamber casting. But by making the threaded bolt ends a full sixteenth thicker than the intermediate shanks, it follows that a tubular chamber is formed round each shank. Nothing then is easier than to drill short leads into this chamber from the main conduit above, and direct to the bearings below. Which done, as in this case, the bearings are at least lubricated first of all, the surplus oil then finding its way under pressure into that huge centrifugal conduit which is the crank-shaft; which

subsequently anoints the cylinder walls as they need it from its own store.

Then comes a further problem—just a shade less insistent as to the oil-pump than in the water-pump—how to preserve it from rapid destruction by fluid-friction. Which, as we know by sad experience, is merciless; especially with pumps of the spur-gear type, otherwise, perhaps, the most effective. Why, then, is it that the Green pumps not only refuse to be destroyed in a few hours' or days' running, but are positively good as new after two or three years' work? That, my good reader, is a little *secret de fabrication*; up to you to find out. Only this, I will truly say, you could put it in the corner of your eye and see no worse. And if you looked for it, or were shown, believe me, in one sense you would see nothing!

But you will see for yourself that the reason why the valves in the largest Green motors do not, and cannot, break or distort, is that they are bell-valves.

Again, as to carburation, there are two questions which must have often caused great heart-searchings among other competitors, who somehow missed winning Alexander prizes, and various awards for continuous running, economy, and so forth. What is the special—and singularly non-apparent—reason for that economy and regularity of speed? and how does the Green motor manage to give its full power, no matter whether it be standing on its tail or driving on its nose, or even turning tail over tea-kettle during a looping stunt? Its trunnioned testing bench at home at least puts you on the track of how these results were obtained, but no more. Even its not over-powerful force-feed does not wholly tell the story; though interesting as far as it goes; since it is very simply effected by fitting little wind-cowls to the crank-chamber breathing-tubes, and then connecting these upwardly again with similar cooled air-tubes leading downward into the mixing chamber of each carburettor, directly over the jet. But that at least explains how, while the *balance* of



Two Views of the big 12-cylinder Green Aero-Engine.

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pressures keeps the carburation regular—and, for that matter, does little more—the combination of both, forces the mixture in a steady rush upwards through trunk and manifold into the inlet-passages. For that steady power output you must look further, and finally, merely to the single straight connecting tube between both mixing chambers. If the motor, then, is tilted in one direction, it follows that if the lower carburettor be not flooding, or, indeed, doing more than making its mixture in the normal proportion under the balance of pressures, it is doing all this under an unabated combination-pressure force-feed, enough for two. On the other hand, the upper carburettor is clearly starving, to some extent; for, despite the equal air-pressure service, its jet is getting little or no petrol. But through—and because of—this simple connecting tube between the mixing chambers, each induction trunk can get its normal supply of mixture until the motor comes level again. *Voilà tout!*

The ignition system, one may say, is quite in the ordinary way of such accessory functions in the four and six cylinder models, and calls for no special notice. In the big 300-h.p. twelve-cylinder, on the other hand, its arrangement is what they would call in Essex quite a tricky bit of Mr. Green. His problem was to save the weight and encumbrance of a second large magneto, and yet get the same current at the firing moment, and an equally regular distribution, for each of the second battery of six cylinders. He has managed this with an ordinary magneto of motor-cycle size simply by connecting its single wire direct to one point on the stationary portion of the distributor, and transmitting thence, I believe, through a second rotating contact-plate alternating with the first one, so that the full current from that single wiring runs direct to the particular cylinder of the second battery, which happens to be in turn to fire.

Lastly, one useful—and unique—mechanical feature of any and all of the Green models, from the least to the most powerful, is that, without turning them end for end—which would certainly affect the run aft of the exhaust and the forward run of the induction, and might thus lessen efficiency—they can be used either for tractor or propeller aeroplanes, with equally good results. The method—which may also explain why the crankshaft casing is not lengthened forward in the usual way towards the wind-stick—is this. The propeller sleeve, in the first place, is carried on a three-fold ball-bearing, in duplicate for the sleeve support, with the rest forming a larger endwise bearing so as to take the end thrust of the "wind-stick." This triple bearing is then set in, and as far back as possible, over the desired crankshaft extension, and secured in place by an open nut screwed over the bearing, but carrying a series of radial wedges—not unlike the headstock of a lathe—cross-threaded above, in series with threads on the outer periphery of the securing nut. Now the inner end of the propeller (or tractor) sleeve is threaded internally to run on this nut, but in the reverse direction. So it follows that, as this sleeve runs on, it picks up one by one the progressively stepped threads outside the nut, and, so doing, jams the wedges hard down, to lock the bearing finally in place, being itself carried in a close bearing fit, internally, on the crankshaft extension, and finally keyed on for security in the usual way. Nothing very elaborate about this thrust-block shift, or its mechanism; but its "movability" makes all the difference—with who shall say how much commercial and service value added?—to the Green motors.

So the result, in fine, of this studious conception of details, with a view not only to their individual work but the relative part of each in the aeroplane scheme, beyond that of the motor merely, is that you can hardly wear out a Green aeromotor wholly, for it is such a thing of easy repairs and replacements. There is poor S. F. Cody's veritable one, after all its thousands—of miles

aloft, and all that has happened to it, to-day furnished up good as new. Also another, that lay at the bottom of the Thames for days, after the capsizing of the hydroplane in which another famous but much younger pilot and aero-maker had installed it. And so with many another relic and ancient example of Green durability.

(To be continued.)

OBITUARY.

The death is announced of Mr. Philip James King, of Barking, who is stated to have designed the first English balloon to cross the Channel.

He also designed the fish balloon, which was probably a forerunner of the modern airship, and the owl balloon, which was ninety feet high.

Mr. King was also a well-known yacht-builder, and was formerly employed at the Thames Ironworks. He was seventy-five years of age.

TYRES WHICH NEVER TIRE.

The world has now been familiar for many years with the Palmer Cord Tyre, and the great success it has achieved is no small tribute to the foresight of the astute managing director of the company, Mr. E. J. Mitchell, who adhered to his belief in the tyre in the early days, when many of his friends looked on it as a somewhat humorous freak. The Palmer Cord fabric is so well known that detailed reference to its structure is perhaps unnecessary. The fabric is the strongest flexible material known, and the tyres are, therefore, strength for strength, lighter than any others made.

With the practical experience of many years in the motor industry it was in the natural course of things that a similar tyre would soon be evolved for the benefit of the aviation industry. The Palmer Cord Aero Tyres have already proved themselves as successful as were those for motor-cars, and enormous quantities have been, and are being, supplied to the Government and other purchasers. Many kinds and sizes are made, and apparently it has been the aim of this enterprising company to keep a little ahead of the market, so that new sizes are ready for any new kind of aircraft which may be designed. Interesting disclosures might be made on this point were it not for the existence of a Press Censor!

The manufacture of steel wire wheels is also being proceeded with. These wheels are extremely light and strong. The rims are of special design, and the beads of the cover are so constructed that they lock into the rim. They are thus capable of withstanding enormous lateral stress without pulling out of the rim.

A striking illustration of this fact occurred recently at Hendon. An experimental biplane landed in rough ground, and one wheel was driven deep into a strip of moist clay. As described in THE AEROPLANE of October 6th, the weight of the machine embedded the wheel so firmly into the clay that the whole machine swerved sharply round. The strongly built chassis collapsed, but in spite of so great a lateral strain the tyre was not damaged in the slightest degree. A more severe test has seldom been put upon an aero tyre in actual practice, and it is only right to place on record the fact that it was a Palmer Cord Aero-Tyre.

As an indication of the thoroughness with which this department of their business has been organised, it is interesting to note the attention given by the company to the interchangeability of aero tyres and wheels. The 700 x 75 was formerly the standard size for B.E.'s, but with the increased weight of engines and the frequency of forced landings on soft ground, which occur on active service, a 700 x 100 was adopted. These tyres are interchangeable, as are also the 575 x 60 and 600 x 75, and the 700 x 100 and 750 x 125, which is a great consideration in times such as those through which the aviation industry is now passing.

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When Palmer Cord Aero Tyres and Wheels are well spoken of on every hand, with never a complaint, the principle must be sound and the manufacture excellent.

D. W. T.

THE CENSOR AT —.

[Last week-end, one who has acquired the Censor habit is alleged to have paid a visit to a certain aerodrome somewhere in the Home Counties. He wrote an account of what he saw there, but from force of habit has censored it, and the following is all that remains. It should be noted that the report is unofficial.—Ed.]

On Saturday afternoon I reached the *point d'appui* which was my objective. The weather was favourable, a dead calm prevailing, and the scene of operations fairly well selected for its purpose, though the ground was, in some parts, apparently intersected by trenches.

Under the usual system adopted at G.H.Q., it was announced by megaphone, shortly after my arrival, that Mr. X— was making a flight on a blank horse-power dashplane, accompanied by a passenger. The announcement, however, caused no appreciable disturbance among the troops (of visitors).

I found considerable activity on our extreme right, and several of our aircraft ascended into the —, carrying observers. The machines used were G.W.—'s, the pilots being Messrs. M—, W—, and O—.

By way of reprisal, a number of small blue tractor biplanes known as C—'s were sent up from a point near the N.W. end of the ground, Mr. J. L. H—1 reaching a height of 3,000 feet, while two B—'s were on other C—'s.

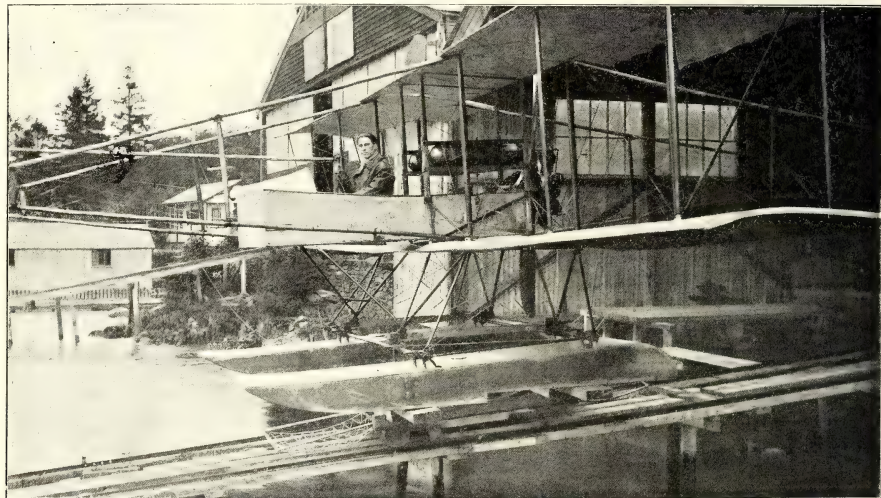
A B.E. two C— appeared above our lines about this time, and proceeded to loop the loop and to execute a circling movement, as though attempting to cut off its right wing, and the manœuvre was repeated a moment later, no damage occurring. Those onlookers who were not engaged in the commissariat department when this took place followed the movements of the battle-plane with the closest interest. The controller of this craft was said to be a Transatlantic sergeant named R—.

The M— experimental biplane was brought out, and placed in a commanding position near the barbed-wire (2s. 6d.) enclosure, and I climbed in the observer's seat, Mr. A. E. B— acting as pilot. After reconnoitring in comfort for half an hour at a height of 3500 feet, we ascertained that there had been a loss of eight miles (per hour) since this machine was last flying, and returned to our base to report accordingly. After slight adjustments next morning, four out of the lost eight miles were recaptured, and the remainder on Monday.)

Other pilots mentioned in despatches during the day were Messrs. S— and J— (of the L. & P. Corps), Messrs. R. K— and J. H. M—.

By 6 p.m. all was quiet, and there was nothing to report.

On Sunday, at daybreak, the schools commenced work, and continued practically all day, five certificates being captured. One exciting incident occurred. A pupil attached to the H— School, of the name of B—, of —, near —, climbed to a considerable height in order to make a v.p., ran into a mist, and was accordingly re-



Mr. Sibley on the Northern Aircraft Co.'s School pusher biplane at Windermere.



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ported "missing, believed killed." After making an incomplete circle he cut off his engine and landed later in hostile territory at C— P—, without injury to himself or his machine. [C— P— is three miles to the north of —.]

Scouting parties were sent out to locate him, but the first, Mr. V—, got lost, but returned, having violated the neutrality of Finchley; and the second, Mr. R— K—, was also unsuccessful, being delayed in transit.

In the afternoon there were a good many non-combatants present, and flying continued until dusk. Renewed activity was visible on the part of all the pilots who had taken part in the engagements of the previous day, their numbers being reinforced by Mr. H. F. S—, who executed some daring and spectacular movements. Mr. M—, on a new — School plane, reached an altitude of 3,000 feet in remarkably short time, and descended in a steep spiral consisting of 25 or 30 turns.

The various schools continue to make satisfactory progress. Sensational reports have been circulated as to the alleged . . . but these emanate from an untrustworthy source and should be disregarded. It has also been said that . . . but this is an obvious exaggeration. The real position is that . . . [and so on].—D. W. T.

School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon	Fine	Fair	Fair	Fine	Fine	Fine	Fine
South Coast ...	Fine	Very Dull	Dull	Foggy to Fine	Fine	Fine to Dull	Fine
East Coast ...	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Lake District ...	Wet & Windy	Fair	Bumpy	Wet & Dull	Windy	Fair & Windy	Perfect

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Instructors for the week: Messrs. Manton, Russell, Pashley, and Winter.

Pupils with Instructor on machine: Prob. Flight Sub-Lieuts. Applin, Davenport, Graham, Moody, Owens, and Gammon. Straights alone: Prob. Flight Sub-Lieut. Cross. Circuits with Inst.: Prob. Flight Sub-Lieuts. Man, Sadler, and Till.

Figures of eight or circuits alone: Prob. Flight Sub-Lieuts. Davies and Hackman.

Certificates were taken by Prob. Flight Sub-Lieuts. Biscoe and James.

Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Pupils with Instructor: Messrs. Brund (18), Cole (40), de Graouw (24), Vernon (16), Coppens (24), Cuthbertson (24), Flanders (20), Harkness (24), Johnson (8), Sherwood (32), Griffiths (24).

Pupils doing straights or rolling alone: Lieut. Prothero (14), Liddell (35), Stewart (41), Bailey (33), May (34), Sherwood (16), Cole (12), de Graouw (12).

Pupils doing figures of eight or circuits alone: Lieut. Prothero (20), Lieut. Ball, Lieut. Rees.

Certificates were taken during the past two weeks by Captain Faigbairn-Crawford, Lieuts. Rees, Ball, Prothero, Gardner, Clive-Gallop, and Private Chambers.

Machines in use: Three Ruffy-Baumann, Caudron type, tractor biplanes of 50 and 60-h.p.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, G. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Baldwin (15), Bond (30), Byrne (10), Baker (30), Begg (60), Brown (20), Brynildsen (30), Campbell (20), Collett (16), Collier (40), Cowper (36), Cumming (20), Davison (10), Delves (25), Duffus (31), Fawcett (16), Fellowes (30), FitzHerbert (75), Fox (5), Gayner (22), Hodgson (55), L. F. Jones (25), T. Jones (15), Kirkwood (20), Lashmar (28), Mellings (21), Murdoch (10), Nash (24), Nicholson (27), Onley (10), Owen (40), Patterson (10), Podmore (20), Schollaert (10), Smith (25), Stagg (29), Symington (5), Willmetts (30), Whincup (15).

An excellent ticket was taken on the 13th by Mr. T. Jones.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday and Sunday.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, and C. M. Jacques.

Pupils doing straights or rolling alone: Messrs. Law, H. Roberts, J. Roberts, Dawson, Lockett, Lees, Lambert, Thorpe, Burton, Hardy, Woods, Hunt, Jackson, and Jones, rolling. Messrs. Lewis, Jowett, Little, Renton, and W. Warren, jun., straights.

Figures of eight or circuits alone: Messrs. Northrop, Medaets, Lander, and Farrow.

Certificates were taken by Lieut. Lander, Lieut. Farrow, and Monsieur G. Medaets.

Machines in use: Four Caudron type.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor on machine: Messrs. Franke, Mansel-Howe, Horridge, McConnel, and Jones.

Doing straights alone: Mr. Fraser.

Certificate taken during week by Mr. Ellis.

Machines: Grahame-White biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

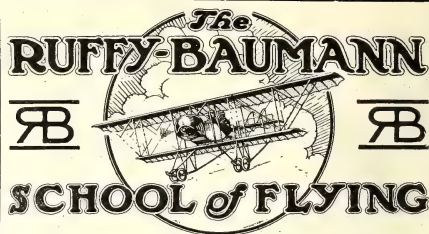
Instructors for the week: Messrs. W. Rowland Ding, J. Lanchester Parker, and W. Laidler.

Pupils with Instructor on machine: Messrs. Coats (11), Jeffreys (14), Ingham (15), Lieut. Manning (12).

With Inst. as passenger: Messrs. Ridgway (19), Inglis (19), Robertson (23), MacIntyre (6).

Machine in use: N.A.C. 80 Gnome propeller biplane.

On Thursday we had the misfortune to have a broken piston and two connecting rods in the 80 Gnome. The machine has since been out flying well. Mr. Ding's 100-h.p. Anzani-Blackburn monoplane, with dual control, has arrived, and is being rapidly assembled.

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WEDNESDAY, OCTOBER 27, 1915

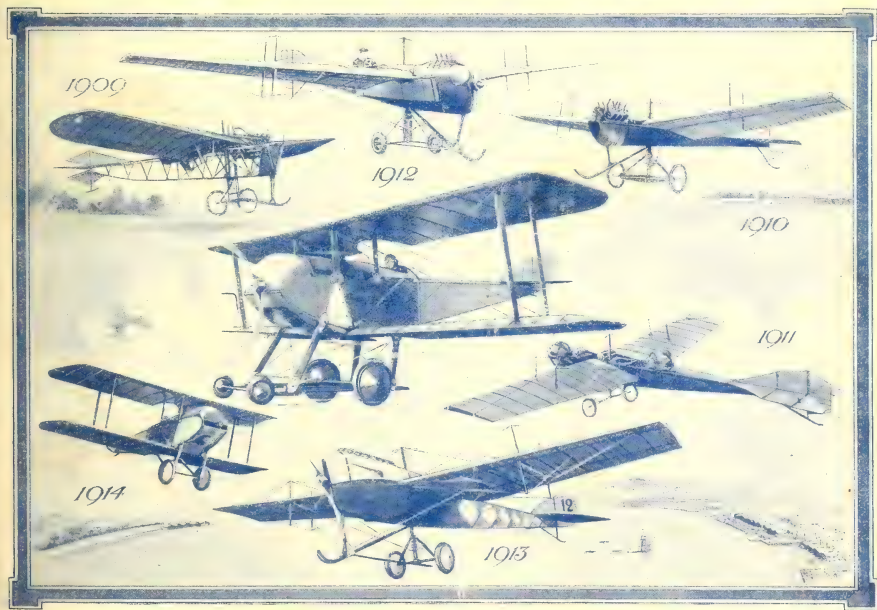
Edited by
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Vol. IX. No. 17

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MILESTONES—IX



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ON ANYTHING BUT AVIATION.

Things are really becoming quite interesting. If they go on as they are shaping at present the flying people at sea and at the front will find in their belated papers from home something worth reading as a relief from the boredom of being Archied, and Zepped, and submarined, and so forth.

First of all, a genuine brass-hatted general who has been prominently in the limelight for years is recalled from his command to make a report, which means explaining why things have happened very much as most of us who knew something of the South African War and subsequent history expected them to happen. Some people at the various fronts are strongly of the opinion that some generals instead of making reports ought to be the objects of reports—blind-fold, with their backs against a wall.

Then, a member of the Cabinet resigns because he is frankly fed up with the shilly-shallying of the "wait-and-see" Government. Personally, I do not like Sir Edward Carson's politics so far as Irish matters are concerned; but, at any rate, he is a man, and a strong man. If it is going to take a revolution to shift this Government, it will be interesting to see whether or how Sir Edward plays the part of a modern Robespierre. In this country we do not revolute as in France, or even as in Mexico—more's the pity, perhaps, for some of our politicians on both sides who have brought the nation into its present parlous position would look better framed in a guillotine or a rope border than in most other pictures. Probably, when the revolution does come, the public will know little or nothing about it. Everything will be done "decently and in order," prayer-book fashion.

FRENCH PRECEDENTS.

There is excellent precedent for the shifting of high commands and for revolutions in political affairs without detracting from the efficiency of troops in the field, for after the Great French Revolution the States General changed to the Directory, and thence to the rule of the Consuls, and thence to the First Empire while France was continually at war. Generals were recalled, disgraced, imprisoned, deported, and otherwise despitely treated. Politicians were frequently decapitated, yet, with every political and military change, the fighting value of the French Army and Navy increased. France even crushed a dangerous rebellion in La Vendée while all this was going on.

In our own little way we have seen the startling revolution of a Coalition Government replacing a Single Party Government, without any noticeable harm coming of it. But, so far, no apparent good has come of it either. And, certainly, in the matter of the Royal Naval Air Service the loss of Mr. Churchill's energetic backing has retarded progress very materially. The coal strike, the various ship-building strikes, past, present, and future, and the general contempt of the British workman for law, order, and discipline, were, and are, at least as dangerous to this country as was the rebellion in La Vendée to the French Republic, but

neither the Single Party nor the Coalition Government has had the pluck to tackle the dangers as the First Republic tackled its rebels, or as the Third Republic's Socialist Minister tackled the railway strike a few years ago.

If only the Permanent Officials, who do certainly know their work, could induce King George V to depart from his strictly constitutional attitude, to effect a *coup d'état*, to act as Cromwell acted towards his incapable Parliament, and to take personal command of political affairs in this country, much as his cousin the Czar is said to have taken command of military affairs in Russia, I believe the whole British Empire would rejoice with all its strength, and the people of Great Britain would obey his orders as they would obey those of no other living man. That, indeed, would be a revolution after the nation's own heart.

WANTED—A LEADER.

What this country wants is a leader—a man it can respect, and in whose honesty it can trust. When one sees departments of the utmost importance to the successful prosecution of the war being run by men who were mixed up in that singularly unsavoury Marconi scandal, one is not surprised at the queer stories of financial deals and of unduly influenced appointments which float about and destroy plain people's faith in the present management of affairs. And when one sees alleged statesmen of one party hob-nobbing amicably with the very men whose characters they were busily blackening a couple of years ago, one is moved to wonder whether their party's moral level is any higher than that of the other party.

To tell the truth, no thinking man has any faith in any of our politicians, and, apparently, we have no statesmen. Even our Foreign Minister, the one man on whose reputation no slur has ever been cast, is not regarded with quite the admiration which was his before our muddled diplomacy in Turkey was exposed, and before our trafficking with Bulgaria over the Macedonian business became known. Possibly, the Lord Haldane's influence at the Foreign Office during Sir Edward Grey's absence through eye-trouble has not been to the Foreign Minister's advantage, and after what we know about Lord Haldane's régime at the War Office, and the irretrievable harm done by his nominees to Military Aviation, it is not surprising that any other department which may have come under his influence should be similarly infected with some strange microbe which operates to the country's disadvantage.

Briefly put, the state of affairs is that no one has either faith in or respect for any of the politicians who now have control of the Empire's affairs. The British workman, on whom ultimately the Navy and Army depend for supplies—and recruits—will not obey the laws made by the present Government, and there is no great leader who can inspire the workman with enthusiasm. Yet, being at heart a sentimental people, as are all peoples of Teutonic origin, the English are singularly prone to hero-worship.

Lord Kitchener, the Strong Man, somehow missed becoming the national hero—perhaps he did not show his strength at the right moment. Mr. Lloyd George, the Revivalist, missed it still worse—as a national hero the Minister of Munitions is about as inspiring as Mr. Selfridge or the Managing Director of the Army and Navy Stores would be, and he does not seem so efficient a shop-keeper as either of those personalities certainly is. Also, despite the booming he has had from the London Press, he lacks a "Callisthenes" to tell the world every day in papers of all political complexions how wonderfully his store is run, and how his employees—the British workmen—find the pleasure of their lives in serving the public. No one outside these two has so far shown, on either side of either House, any definite sign of being the great national leader.

A LEADER OF MEN.

Sir Edward Carson alone has shown himself to be a great leader of men. His handling of Ulster when civil war in Ireland seemed imminent was absolutely masterly. I firmly believe that he formed and took personal control of the Ulster Army in order to keep the turbulent spirits of the North in check, and not with the object of inciting them to rebel against authority. But for the military discipline under which they found themselves the Belfast mob would have broken loose and have wrecked half the city when the Home Rule Bill passed its first reading. The man who can inspire alike dour and hard Antrim farmers, Belfast dock-rats and shipyard workers, flax spinners of Lurgan and Portadown, and wild agricultural labourers of Tyrone and Fermanagh, is a great man. The man who can organise them and make them a disciplined force is still greater. But the man who can hold them in check when the moment has arrived at which they had hoped to wreak vengeance on those who have been their enemies for generations back, is a very great man indeed. And Sir Edward Carson did all these things himself.

To inspire similarly the softer material provided by Saxon England should be an easy task for him, provided his wonderful work in Ulster has not worn him out, and

provided that he can control sufficient political backing to overcome the obstacles which will be put in his way by the little politicians who have mismanaged the nation since war began. It would be a tragedy if he embarked on the task of saving the nation only to suffer the fate of Gulliver among the Lilliputians.

As I have said, I do not like his Irish policy. I like still less the way the precious Ulster Division was kept at home to nurse its two or three cases of measles while our South of Ireland Division was sent out to the slaughter at Suvla Bay and on the Gallipoli Peninsula, its unity as Ireland's representative army having been destroyed on its arrival in the East by separating its various brigades for reasons which perhaps Sir Ian Hamilton may be able to explain when he makes that promised report. Nevertheless, Sir Edward Carson has probably not been in any way responsible for what has happened to the Ulster Army, since most of it enlisted in the Ulster Division, and he has definitely shown himself to be the one big personality in the political world today.

Is he a big enough man to give the British people that inspiration for which at heart they are longing? And if he becomes the national leader, as he well may, is he a big enough man to organise his followers up to a point and then ask the King to rule the people himself?

There is, I believe, a provision in the British Constitution under which the King can, at forty-eight hours' notice, dismiss his Parliament, if it is evidently imperilling the safety of the nation, and rule the country with the help of the Permanent Officials alone until such time as a General Election can be held. It must be evident to every thinking person that such a time has now come. We are sheep without a leader. Those who should be our leaders are, like Milton's bishops, "blind mouths"—blind shepherds leading their flocks astray, and mouths consuming themselves the food with which their flocks should be fed.

If such action be taken the country will cry "Long Live the King" with a sincerity such as this generation has never known. And there need be no hurry about that General Election.—C. G. G.

ON THINGS IN PARLIAMENT.

Readers of the foregoing article—if they have survived so far—may have wondered just what it has to do with aeronautical affairs. As a matter of fact it has a lot to do with them, for the lack of progress in British aeronautics has been entirely due to inept politicians.

Lord Haldane at the War Office was unfavourable to aeroplanes and only feebly interested in airships; also when forced to recognise the need for aircraft he was primarily responsible for the establishment of the Royal Aircraft Factory in the position which enabled it to weaken and almost to destroy the aircraft industry. J. E. B. Seely, Lieut.-Col. (T.F.), as War Minister, became simply the mouthpiece of the R.A.F., and was in due course exposed in the House of Commons as a publisher of misleading statistics. The harm they and their followers did cannot be calculated by any ordinary system of reckoning, and can only be illustrated by the fact that a month before war broke out the Royal Flying Corps could only raise thirty aeroplanes in flying order at an official inspection.

Even the one bright spot in the politics of aviation, Mr. Winston Churchill's strenuous and largely successful efforts to build up an effective Naval Air Service in an impossibly short time, could not redeem the harm done by all the other politicians who have tinkered with Service aeronautics. And to-day politicians are wasting time and talking nonsense as vigorously as ever, as anyone may see who has read the Parliamentary debates of the past week.

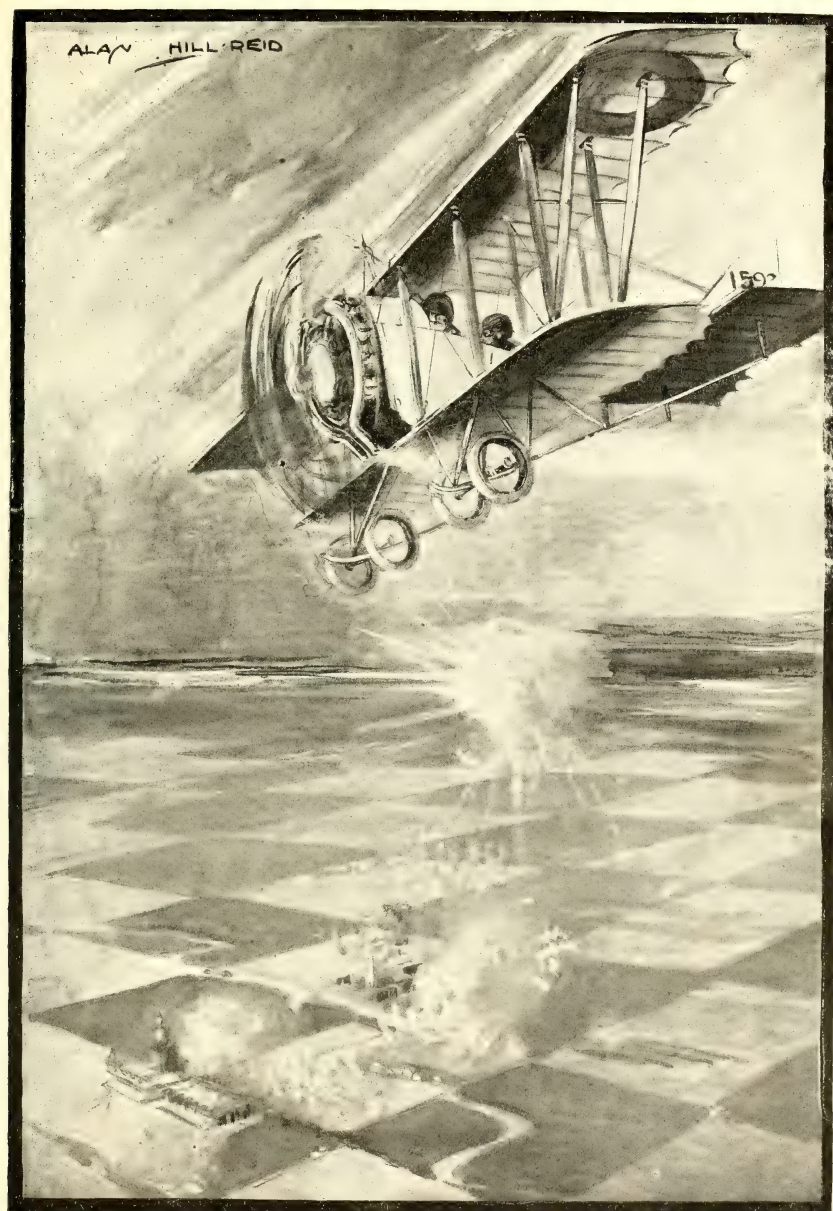
It has been the custom of this paper in the past to reproduce in full all references in the House to Service aeronautics, but of late ministers and private members alike have perpetrated so many imbecilities on the subject that it would be merely wasting space to perpetuate them in print. I propose therefore to deal briefly with such points as seem worth mentioning at all.

THE SOUNDNESS OF THE PEERAGE.

Curiously enough, most of the few really sensible remarks on the subject were made in the House of Lords—the Hereditary Chamber, despised by all good Democrats—showing clearly that the education and comprehension of its members are considerably higher than those of the elect of the people. Here is the conversation:—

Lord STRACHIE asked the Civil Lord of the Admiralty (1) whether the anti-aircraft guns were of any more effect last Wednesday than they were during the previous Zeppelin raid on London; (2) whether the great reduction of the lighting of London was of any real value during the last raid in comparison with the previous one; (3) whether any steps had been taken to give London as far as possible the same protection from aircraft which Paris enjoyed, and, if not, why not; (4) and whether the anti-aircraft guns here were not used effectively against the Zeppelins as they might have been for fear of doing damage to persons or buildings.

The time had come, he said, when the Government ought



A PAWN IN THE GREAT GAME.

to take the people of the country much more into their confidence than they seemed willing to do. One heard in regard to the latest raid that the shooting was just as ineffective as on the previous occasion. As to the reduction of lighting, it did not, as far as one could judge, seem to have had the slightest effect. If that were so, and if semi-darkness were really of no value, would it not be better to adopt less stringent regulations?

He was credibly informed that in Paris they were taking most admirable precautions against raids by hostile aircraft. In Paris they had a proper landing place for aeroplanes, whereas he was told there was no such landing place for London nearer than Hendon. One would have thought that Hyde Park was large enough for the purpose, and if he were told that the trees were an obstacle he would suggest that they could be cut down.

He was rather amused at the statement made in the House of Commons the other day that we had only three of our aeroplanes up during the recent raid. It was most desirable that a clear statement should be made as to what exactly had been done.

The Earl of PORTSMOUTH urged that the people should be warned by the Admiralty when a raid was anticipated. He would also like to be assured that measures had been taken to remove the priceless treasures which existed in public buildings in London to some place of safety.

LORD SYDENHAM pointed out that many technical difficulties faced the anti-aircraft gunners, and suggested that if they were men who had had experience in firing at hostile aircraft in the trenches the results might have been very different. If unpractised men were put in charge of such guns, it was very much like expecting a man who had never fired a shot gun to bring down driven grouse.

With respect to illumination, he thought we had gone, perhaps, a little further than was necessary in the direction of darkening the streets. If the illumination was kept low enough to prevent the identification of special objects that was as far as it was necessary to go. As the illumination got lower and lower it made it easier for enemy aliens in our midst to give flashlight signals. The real chance of the aeroplane was to find the Zeppelin before it struck our coast in daylight.

The conditions of Paris were very different from those of London. Paris was surrounded by a chain of forts, which, no doubt, were armed with heavy and long-range guns, and besides the Zeppelin had to pass over the lines of the Allies' trenches. Moreover, he was not sure that the killing of women and children in Paris would give such pride and satisfaction to the Germans as the killing of women and children in London.

What he had to complain of was the long delay which had occurred before there was anything like proper organisation for meeting air raids. The Government had had ample warning, but until lately nothing appeared to have been done to take the whole question in hand. Even now he was not sure that the country could count upon some complete organisation having been made to prevent a division of responsibility, which meant, in the long run, no responsibility at all. He was strongly opposed to reprisals in kind.

THE DUKE OF DEVONSHIRE said:—The speech of the noble lord who has just sat down has to a large extent answered the questions on the paper. I am not in a position to make any statement as to the removal of the records and pictures referred to by Lord Portsmouth, but if he will put down a question I will be very glad to give him all the information I can. With regard to the question of giving warning of the approach of Zeppelins, I have heard it discussed, but I think the probable effect of such action would be to bring an even larger number of persons into the streets than now. It is anticipated that any such warning would probably lead to the emptying of theatres and the collection of large crowds. With regard to the questions on the paper I have to say:—

1. No evidence is in the possession of the Admiralty to show that any Zeppelin has been brought down by gunfire in either of the two raids on London.

2. This clearly must be a matter more or less of speculation; but the information of the Department concerned is that the reduction of lighting in London was of value.

3. The cases of Paris and London are not exactly on all fours. We are thoroughly cognizant of what is done in Paris, and we are making every effort with the means at our disposal for the protection of London.

4. I am in a position to state that there is no foundation for the suggestion contained therein.

I can assure my noble friend that the Admiralty will not rest content until every step has been taken to render the protection of the metropolis as efficient as we possibly can. The problem is by no means simple. It requires great consideration. We have availed ourselves of the best information obtainable; no effort has been spared to get the best material, and I hope we shall be in a position to make the defence of London satisfactory.

LORD STRACHIE asked whether Sir Percy Scott had control of the aeroplanes. He understood they were under the control of the Army Council.

THE DUKE OF DEVONSHIRE said he understood that a question was addressed to the Prime Minister on the subject and that he would make a detailed reply. At the present moment the aerial defence of London was in the hands of the Admiralty, and they were working in close co-operation with Sir Percy Scott, who was also responsible for the gunfire.

LORD SYDENHAM said there were stories of signalling to the Zeppelins by means of lights or flashing up chimneys, and it would be well if they could be set at rest.

THE DUKE OF DEVONSHIRE: I am afraid I am not in a position to answer that question. I had not heard of it before, but I will make inquiry.

A CONTRAST WITH THE COMMONS.

LORD STRACHIE's questions all find their mark fairly effectively. The fourth is, of course, a suggestion that certain guns were merely firing blank. Some certainly sounded like it; but that may have been only that they are of a different type from those to which one is used, and so have a different sound. His suggestion that Hyde Park should be used as a landing ground for aeroplanes merely arises from an excusable ignorance of the capabilities of aeroplanes and pilots as Zeppelin hunters in the dark. The three aeroplanes to which he referred were three too many, under existing conditions.

LORD SYDENHAM, as is usual when he speaks on guns or aircraft, showed sound practical knowledge of his subject. His point that reduced lighting made signalling easier is one well worth considering—and incidentally I may point out that my ancient scheme for a carpet of searchlight beams all over London would make signalling impossible. His remarks on the lamentable lack of organisation against airship attack are very much to the point.

The Duke of Devonshire's replies are straightforward and honest answers to very awkward questions, and it is refreshing to read them after the would-be-clever prevarications to which Colonel Seely and his apt pupil Mr. Tennant have accustomed the House of Commons.

On the whole I am inclined to think that the House of Lords might be of considerable assistance to his Majesty the King and the Permanent Officials in governing the country, if the pettifogging crowd in the House of Commons be forcibly dissolved. At any rate, the majority of the Peers are gentlemen and have had quite a fair education, besides which they have a personal interest in the nation's welfare, and have no particular axes to grind.

THE TALKING SHOP.

So far as the House of Commons is concerned there was much talk as usual. One is in no wise tempted to

believe that the quality known as Common Sense derives its name from this establishment. On the 21st Mr. Balfour delivered himself of the Solomonesque statement that "the degree to which it is desirable to use aeroplanes for night defences against Zeppelins is a very difficult one," which approximates to sense, even if it is not grammar. Further he said that "under no circumstances do the authorities consider that an adequate defence against night attacks by Zeppelins can be provided by aeroplanes"—so that's that, anyhow.

Curious lack of information is shown in his reply to a member who inquired if Zeppelins were not over London between 9 and 10 o'clock, and again about midnight. Remember the raid took place on the 13th, and it was on the 21st that he replied, "I should like notice of that question. There was a raid over an adjoining borough late at night, but whether by the Zeppelin that went over London earlier in the evening, I am not quite sure." Considering that any intelligent Londoner possessing a fairly widely spread circle of friends residing in the "home counties" could trace the course of each ship to a nicety in about two days, it would be surprising to find such ignorance in the Minister most concerned, if one were not used by now to our House of Commons.

THE MATTER OF GUNNERS.

Sir H. Craik made the surprisingly sensible suggestion that trained artillery officers, who have come home sick or wounded, should be turned on to anti-aircraft duty when fit for it. Mr. Balfour seemed to think it might be worth considering. In any sensible country such a thing would have been done months ago.

Here I may remark that gunner officers—especially officers of Indian mule batteries, trained among the passes and peaks of the North-West Frontier—are accustomed to firing at targets at varying altitudes, and are used to varying angles of fire, whereas naval gunners have never fired at anything above their own level, and so are only used to calculating horizontal ranges. Hence, even the finest naval gunners are less likely to be useful than field artillerymen or mountain gunners. Which only increases one's amused astonishment at Admiralty folly in thinking that H.M.S. "Flatroof," with her amateur crews of barristers and shop-assistants, organised by a youthful naval officer, could ever be of any use at all. Anyhow, the trivial stipends of the members of the farcical Anti-Aircraft Corps will help them to pay their income taxes.

There is, therefore, little satisfaction to be got out of Mr. Balfour's statement that "there has been no change in the *personnel*," even with the assurance that the officers go through a short course at a gunnery school, and the men are now being sent to Chatham. There was a trifle more comfort in his remark that "arrangements are also being made for men to be sent for training to the British Army in France." The whole farce justified Mr. Annan Bryce's unanswered question, "When is it considered probable that these gunners will be able to attack the Zeppelins?"

A sensible suggestion is that anti-aircraft batteries which have done good work abroad should be brought home for a rest and put on to London defence.

A SANE HOME SECRETARY.

Sir John Simon—the Home Secretary, in case you have not heard of him—was fairly rational on the subject of divided responsibility. He pointed out that the Admiralty looked after the "military" operations, as is right and proper, and the Home Office "endeavours"—as he put it—to administer matters of police and of a non-military character. His objections to the proposal that Londoners should be forewarned of raids were that raiders are often signalled on the way across the North Sea, "or"—as he said—"across what I believe some

people used to call the German Ocean," and have never come inland at all, or have wandered aimlessly over agricultural areas; therefore, if warning were given, nine times out of ten the public would be disappointed. People concerned with defence work are warned, and I quite agree with Sir John Simon that after all that is enough for practical purposes.

In other directions Sir John Simon showed quite a fair grasp of his subject, as in his contention that if warnings were given people who live out of town would flock to railway termini and cause congestion there, owing to the stoppage of trains. This stopping of trains is quite a sound notion, for, veil windows as one may, one cannot stop the glow and sparks from funnels, nor the flashes from electric rails, and these are quite useful guides. Sir John even gave to parts of his speeches a neat touch of humour, as when he told of the cinema audience which was warned that a Zeppelin raid was in progress. The show was closed down, whereupon "one or two persons present bitterly complained that having paid their money they wanted their money's worth," but "a great many more people thought the alternative attraction was too good to be missed, and promptly went into the streets."

A RECORD REPLY.

For about the first time on record, where aviation is concerned, Mr. Tennant gave a straightforward and fairly intelligent reply to a question. Mr. Joynson-Hicks, who ought to have known better, asked the Prime Minister whether the Cabinet had considered the policy of aeroplane reprisals on German towns as a deterrent to the Zeppelin air raids on our defenceless population; and whether such policy would be adopted.

Mr. Tennant said: "The policy of reprisals is one always open to considerable controversy. The Royal Flying Corps is a military organisation, and is engaged in military operations. Dastardly raids by the enemy on undefended towns and defenceless people should not be allowed to divert the energies of this fighting force from its primary military duties."

It may be taken that if we had aeroplanes to spare, and if those aeroplanes were capable of reaching German territory from any position now occupied by British troops, nothing would please the majority of our pilots better than to wipe out German towns wholesale. If civilians choose to remain in the area of military operations they do so at their own risk—as many of the inhabitants of towns within range of big gun-fire do in France at present. The increasing radius of action of aircraft merely increases the area of military operations, so we who choose to remain in that area have no right to squeal if we are hit.

At present our aeroplanes cannot reach Germany from Flanders, and if we offered to send quantities of aeroplanes to the French Eastern Frontier—as we sent three for the Friedrichshafen raid—the French might well object that we were poaching on their preserves. Also, the French railways are quite busy enough supplying their own vast armies, without having to carry supplies for the thousands of mechanics who would be needed to look after a big fleet of aeroplanes.

In any case, before we start risking pilots and machines on merely smashing up German towns we have to finish our purely military operations. Which means that every railway junction and every bridge in Belgium and Northern France has to be smashed. And that will take all the time of all the pilots and aeroplanes we are likely to produce for some months or years to come, even at an increased rate of production.

Something might be done in the way of raids from the sea, on the North Sea and Baltic coasts of Germany, but even there raids on naval stores would be more effective.

tive than mere smashing expeditions. The most useful raid, from a political point of view would be one from the Baltic on Berlin itself, which is about the same distance as from Belfort to Friedrichshafen, or from Antwerp to Düsseldorf. That might have some moral effect in smashing administrative centres—which is apparently the object of the Zeppelin raids on London, though there is more than a little truth underlying the Service jest that any German aeronaut who "does in" the Admiralty or War Office is to be cashiered on his return, on the grounds that if they are destroyed England will have to start new offices, and may, in doing so, evolve some approach to efficient organisation.

WHO IS TO BLAME?

Talk about "dastardly raids," "undefended towns," and "defenceless people" is as silly as are the arguments of those who object to retaliatory raids because they entail "stooping to German methods." In a well-ordered country there should be no such thing as an undefended town, and defenceless people are the victims of an incapable Government. When two countries are at war let them fight it out properly so that everyone can have a hand in it. There is quite a reasonable amount of satisfaction to be got out of the feeling that although one stops at home one has some share in the risks of war, and if some of the people who are making fortunes out of "jobbed" Government contracts were effectively distributed by bombs, one might actually learn to love one's enemies.

Mr. Tennant also deigned to give a straight answer on the 20th to Mr. A. Bryce, who asked whether the aeroplanes which had been on duty for the defence of London received orders to demobilise at six p.m. on Wednesday, October 13th, a few hours before the Zeppelin raid. Mr. Tennant replied that questions respecting aeroplanes on duty should be addressed to the Admiralty. The aeroplanes under military control were not ordered to demobilise at six p.m. on October 13th. During the time the Zeppelins were over England five military aeroplanes ascended, and of these three were in the air at the same time. Mr. Bryce asked how many were over London, and Mr. Tennant said he thought there were three.

At any rate, that is definite information, and seems to show that the Admiralty does not now believe in sending aviators up in the dark to hunt for things they cannot possibly see. Why the R.F.C. chooses to do so is

not quite clear; but, perhaps, some of the pilots like it purely as a sport, and are permitted to indulge their personal tastes.

POINTS ABOUT DEFENCE.

Doubtless, in due course, we shall have super-Zeppelins, able to climb higher and fly faster than German airships. Then, and then only, shall we be able to deal with Zeppelins effectively by hunting them away from London and destroying them in the open country or over the sea.

Meantime, guns and searchlights and air mines are our best defence, but those guns should be intelligently used. In defending a town one would expect guns to fire at an approaching enemy, and not to wait till the enemy was in the middle of the town and then start plugging town and enemy at the same time. There is something very wrong in the outpost system which does not give warning of the exact path followed by every enemy airship before it reaches its objective.

One friend of mine, who lives in an isolated house, right out in the wilds of the Eastern Counties, has had airships over his house every time there has been a raid on the London area in the last three or four months, but he is not on the telephone and could not communicate, though they passed over nearly an hour before the bombardment of London began. One would think that it would be worth while to establish "listening posts" far away from towns where there would be no chance of town motor traffic drowning or confusing the sound of aircraft. By arranging concentric rings of such listening posts and ordering the telephone system to put their messages through at once, it would be possible to keep exact track of the course, direction, and speed of every airship, and to have the guns ready for it as it approached. Then we should have no danger of the guns of every London suburb bombarding the diametrically opposite suburb in an effort to hit a ship right over the centre of London.

However, doubtless if the war continues long enough to become a recognised national industry we shall work out a proper system of aerial defence, and of aerial attack also. And, anyhow, we who know something about what ought to be done, and has not been done, may be able when Peace breaks out, and the Censor is dead, to expose enough official imbecilities to teach the country a lesson which may improve matters in time to produce some approach to efficiency in the next war.—

C. G. G.

THE A.I.D.'s MOVE.

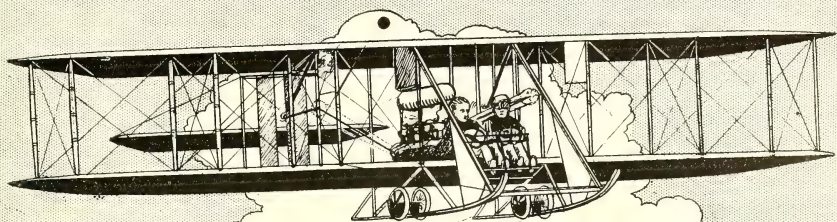
It will be well for aircraft manufacturers employed on War Office contracts to note that the address of the Aeronautical Inspection Department is now 13, Albemarle Street, W. The telegraphic address is "Aerinspect," London, and the telephone number is 6520 Regent.

The transplantation of the headquarters of the A.I.D. from Farnborough to London will greatly facilitate communication between contractors, the heads of this Department, and the Department of Military Aeronautics at the War Office, and one feels confident that the work of inspecting and testing at Farnborough will be none the less thoroughly carried out in the personal absence of the chiefs of certain sections.

It may be permissible at this juncture to congratulate the Chief Inspector and his two chief assistants, in charge respectively of aeroplanes and engines, on the high value of the work done under their supervision. With the best will in the world it is practically impossible to find fault with the A.I.D. system of inspection. Complaints of either harshness or inefficiency on the part of individual

inspectors are so few and far between as to be almost non-existent. The latitude given to constructors in the use of material and methods of manufacture is wholly commendable, and the general attitude of the Department's subordinate officials convinces one that they have had impressed on them the fact that their mission in life is to inspect stuff and pass it if it fulfils its purpose, and that they are not appointed to block deliveries. Moreover, one constantly hears of the considerate way in which suggestions for variations in official specifications are met, and of the open mind with which the higher officials receive such grievances as contractors do on occasion rake up.

The A.I.D. has provided the R.F.C. with the best-built aeroplanes in the world, and it has thus saved many lives, while at the same time it has by gentle persuasion induced constructors to increase their deliveries and to improve their machines without raising the ire of the designers. Such work deserves recognition by pilots and manufacturers alike—not to mention the Higher Authorities who are in a position to give substantial effect to their appreciation in the form of honours and promotion.



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THE R.N.A.S. COMFORTS FUND.

The response to the special appeal for the wherewithal to provide comforts for the men of the Royal Naval Air Service has already met with a generous response, but the personnel of the Service is now so large that many times the amount sent so far can be usefully spent to provide the creature comforts which are so dear to the hearts of those in "lurkin parts."

Special thanks are due to Mrs. Thompson, of 10, Great Stanhope Street, W., for sending large quantities of comforts to the R.N.A.S. men at the Dardanelles.

An incident occurred recently in the Mediterranean which may interest contributors to the Fund. A British transport was torpedoed and lost, and the crew of the seaplane carrier, "Ben-my-Chree" (Squadron Commander l'Estrange Malone, R.N.), generously gave all the comforts they had recently received from the R.N.A.S. Fund to the surviving members of the transport's crew, who had nothing but such clothes as they wore at the time of the disaster.

It should be borne in mind that large numbers of khaki garments are in demand as well as blue ones, as the men of the R.N.A.S., of course, have to do a great deal of shore-going work.

The following cash contributions are gratefully acknowledged by Mrs. Sueter:—

A. V. Roe and Co., Ltd., £100;
The Sunbeam Motor Car Co., Ltd., £25;
Accles and Pollock, Ltd., £10 10s.;
The South Coast Aircraft Co., Ltd. (staff and employees), £10 10s.;
The Misses Newton, £10;
Lady Samuel, £10;
Cellon, Ltd., £5 5s.;
Anon, £2;
Mrs. R. Sebag Montifiore, £1 1s.;
The Sphinx Manufacturing Co., £1 1s.;
Simonis and Co., £1 1s.;
Anon, £1;
Anon, 4s.
Amount previously acknowledged, £1,034 19s. 1d.
Total to date, £1,212 11s. 1d.

It is worth noting that the Avro contribution is the largest yet received by the Fund. It will be interesting to see whether it is beaten.

The Sunbeam Co.'s contribution is also a very handsome effort, as are those of several other firms mentioned. It is hoped that similar sums will soon be forthcoming. Contributions should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

THE REPRISALISTS.

Lord Willoughby de Broke, Lord Hedley, and Mr. Joynson-Hicks, M.P., were among the speakers at a meeting organised by the "Globe" and held on October 22nd in the metropolitan area, to demand protection from Zeppelin raids by a declared policy of reprisals, and to advocate the formation of a Ministry for the air services of the Crown. Mr. Grahame-White was among the audience, and was called to the platform and invited to address the gathering.

Mr. Joynson-Hicks, M.P., moved the usual useless resolution. He referred to those who have written to the "Times" declaring that reprisals on German towns would be contrary to Christian principles as gentlemen whose Christianity enabled them to bear with fortitude the misfortunes of other people, which is a description with which most people will agree, though the epigram is not new.

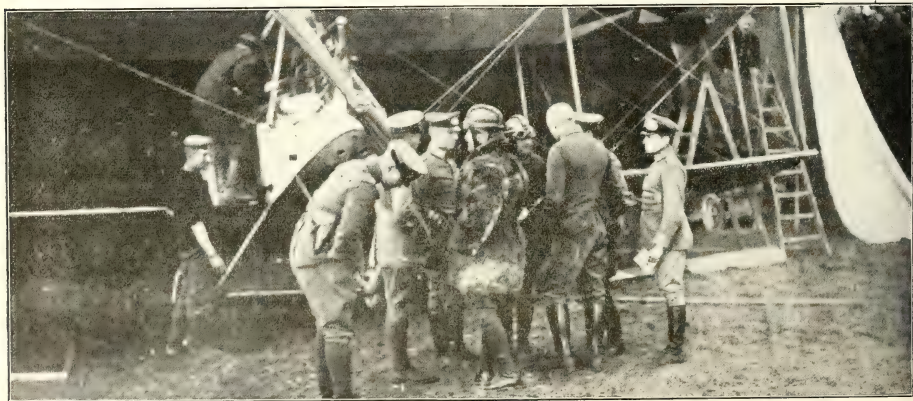
Lord Willoughby de Broke proposed another resolution urging the necessity of the speedy formation of a Ministry of the Air, to take complete and independent charge of the naval and military air forces of the country. The "Times" report says, "The motion was agreed to," from which one gathers that the meeting was not unanimous on the subject. If so it indicates that some people have sense.

Mr. Grahame-White said it did not need a clairvoyant to see, and the man in the street knew, that the air defences of this country were not in the state in which they ought to be. His knowledge of the new industry made him sure that we could do a thousand times more than we had done to combat the Zeppelins. Official encouragement of inventors was lacking. (Heaven save us from inventors! We don't want inventors to waste time on silly experiments. What we want is simply efficiency all round. Efficiency in aircraft works and efficiency in those departments of the Services which deal with aircraft works and handle the products of those works is really needed, and Mr. Grahame-White might well turn his energies to increasing that efficiency.—Ed.]

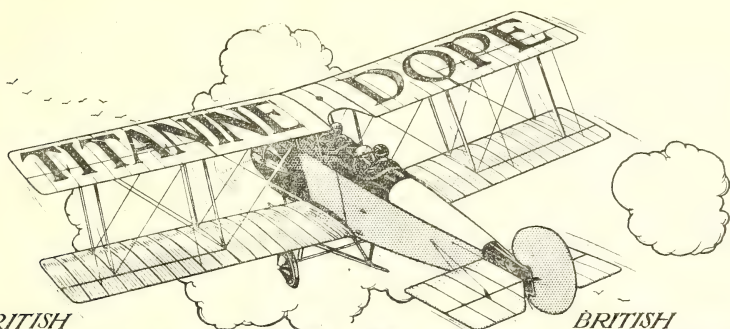
FOR PRISONERS IN GERMANY.

Muriel Countess Helmsley and Mrs. Rowton beg to acknowledge with thanks two further sums, namely £5 5s., from employees of Vickers, Limited, Weybridge, and £2 6s. 9d. from the employees of Vickers, Limited, Bexley Heath, towards their fund for prisoners of war in Germany. A contribution was received from Bexley Heath the previous week, but acknowledgment was omitted in error.

Further contributions should be sent to 21, Upper Berkeley Street, W., and will be duly acknowledged in THE AEROPLANE.



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It would seem clear, therefore, that the life of a Dope may be prolonged by the subsequent application of a coating of a suitable outdoor Varnish, or, better still, a flexible and lasting outdoor Paint.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," October 19th, 1915:—

WAR OFFICE, October 19th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers:—August 20th: Capt. C. R. S. Bradley, 4th Cav., I.A.; Capt. L. Wanless-O'Gowan, Scot. R., and to be seconded; Temp. Sec. Lieut. S. Haywood, E. Lancs, and to be transferred to Gen. List; Temp. Lieut. R. H. Le Brasseur, R.A., and to be transferred to Gen. List; Sec. Lieut. C. E. H. Medhurst, R. Innisk. F., and to be seconded. September 8th: Lieut. P. C. Maltby, R. Welsh F., and to be seconded; Capt. L. Jenkins, Dorset R.G.A., T.F.; Temp. Lieut. A. M. Wilkinson, Hants T.F.; Sec. Lieut. D. W. Grinnell-Milne, R.F., S.R., and to be seconded. September 9th: Temp. Lieut. H. B. R. Rowell, R.E., T.F. September 17th. September 23rd: Lieut. S. H. B. Harris, S.R.

Asst. Equipment Officers:—Sec. Lieut. A. C. Wilson, 12th Lancers, and to be seconded. October 2nd: Lieut. W. K. Campbell, Can. A.S.C.; Temp. Sec. Lieut. S. E. Parker, York and Lancs, and to be transferred to Gen. List; Sec. Lieut. R. B. Jenkins, S. Wales Bord., and to be seconded.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. L. W. Learmonth to be lieut. September 30th.

Sec. lieuts. (on prob.) confirmed in rank: L. A. McDougald, H. B. T. Childs, C. F. Pittman, H. S. Ebben. To be sec. lieuts. (on prob.): H. A. B. Robb. September 4th. J. W. Gordon. September 11th. A. Hunt. September 25th. G. L. Godden. September 28th. P. R. Burchall. October 3rd.

* * *

From the "London Gazette" Supplement, October 20th, 1915:—

WAR OFFICE, October 20th.

REGULAR FORCES.—MEMORANDA.—R. S. Wittchell to be temp. sec. lieut. for employment with Royal Flying Corps, Military Wing. October 2nd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. C. H. Friese-Greene resigns commn. October 21st.

F. E. Goodrich to be sec. lieut. (on prob.). September 10th.

* * *

From the "London Gazette" Supplement, October 21st, 1915:—

WAR OFFICE, October 21st.

SPECIAL RESERVE OF OFFICERS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): W. A. Harvey. September 28th. F. G. Pinder. October 2nd.

* * *

From the "London Gazette," October 22nd, 1915:—

ADMIRALTY, October 20th.

ROYAL NAVAL AIR SERVICE.—Notice in "Gazette," October 1st, respecting confirmation in rank of Prob. Flight Sub-Lieut. S. G. Beare, cancelled.

WAR OFFICE, October 22nd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers:—September 28th: Temp. Sec. Lieut. R. J. Lillywhite, Gen. List; Temp. Sec. Lieut. C. Foggan, Gen. List.

Asst. Equipment Officers:—Sec. Lieut. M. D. McFarlane, Middx., and to be seconded. September 8th. Sec. Lieut. E. S. Bramham, S.R. September 15th. Sec. Lieut. T. W. Winter, S.R. September 22nd. Lieut. Hon. M. Baring, S.R. September 27th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Hon. M. Baring, temp. lieut., to be lieut. September 27th. S. Dalrymple to be sec. lieut. (on prob.). October 11th.

From the "London Gazette" Supplement," October 23rd, 1915.

WAR OFFICE, October 23rd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer: Sec. Lieut. D. Gilley, Devon, and to be seconded. October 8th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: E. S. Bramham, T. W. Winter.

NAVAL

The following appointments were notified at the Admiralty on October 20th:—

ROYAL NAVAL AIR SERVICE.—Mr. R. Saville granted a temp. commission as lieut., R.N.V.R., with seniority October 19th.

Messrs. G. Hazelton and A. H. Handman granted temp. commissions as sub-lieuts., R.N.V.R., with seniority October 19th.

Temp. Sub-Lieut., R.N.V.R., G. A. Armitage and Mr. A. L. Thorne entered as proby. flight sub-lieuts., for temp. service, both to date October 19th.

Temp. Flight Sub-Lieut. A. M. Waistell transferred to permanent list, to date October 18th.

Signalmen, R.N.V.R., E. B. C. Betts and R. M. Inge entered as sub-lieuts., to date October 14th.

* * *

The following appointments were notified at the Admiralty on October 21st:—

NAVAL INFANTRY.—T. Sator, B.A., R. H. Whapham, M.A., B.Sc., and R. R. Cummings, M.A., to the "President," additional, for Eastchurch, Chingford, and Kingsnorth Air Stations, respectively, all to date October 20th.

ROYAL NAVAL AIR SERVICE.—Lieut.-Com., R.N., T. K. Elmsley, to the "President," additional, for R.N.A.S., to date October 9th.

Temp. Lieut., R.N.V.R., R. G. St. John, to the "President," additional, for R.N.A.S., to date October 20th.

The undermentioned have been entered as proby. flight sub-lieuts. and appointed to the "President," additional, to date as stated: A. O. Brissenden and G. Thom, October 3rd; G. L. E. Stevens, September 6th; R. F. Maitland and M. Lyon, October 20th; G. C. V. Hewson and C. Day, September 24th; E. R. Strange, September 22nd; K. M. Van Allen, L. Ewing Smith, T. W. Webber, G. E. Hervey, and J. Robinson, September 30th.

* * *

The following appointments were notified at the Admiralty on October 22nd:—

ROYAL NAVAL AIR SERVICE.—Mr. C. Harrison granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date October 21st.

The appointments as proby. flight sub-lieuts. for temporary service of C. J. A. Mullens and R. H. Nicholson have terminated. They have been granted temporary commissions as sub-lieut. and lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date October 21st and September 30th, respectively.

Sub-Lieut., R.N.V.R. (temp.), R. L. Alport, to the "President," additional, for R.N.A.S., to date October 21st.

The following have been entered as proby. flight sub-lieuts. (temp.), and appointed to the "President," additional, for R.N.A.S., all to date October 24th: A. W. Davie, C. J. Moir, R. S. de Q. Quincy, E. O. Cream, G. Moore, and J. D. Steele.

Mr. J. A. Macnab entered as sub-lieut., R.N.V.R. (temp.), and appointed to the "President," additional, for R.N.A.S., to date October 26th.

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The following appointments were notified at the Admiralty on October 23rd :—

ROYAL NAVAL AIR SERVICE.—Lieut.-Com. (Actg. Sqdn. Com.) E. T. R. Chambers granted the actg. rank of Commander (temp.), to date October 21st.

Mr. G. F. Saunders entered as proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date October 22nd.

* * *

The following appointment was notified at the Admiralty on October 25th :—

Asst. Paymaster.—G. H. Thomson, to the "President," additional, as Secretary to Director of Air Services, to date October 22nd.

* * *

The Secretary to the Admiralty announced the following casualty on October 22nd :—

MISSING.

Reported under date October 19th :—

Flight-Lieut. Lionel D. McKean, R.N. (Asst. Paymaster, R.N.). [See German communiqué of following day.—Ed.]

* * *

Shortly after six p.m. on October 20th a British naval airship passed over London. The voyage had been pre-
faced by an official announcement from the Admiralty. The airship was seen at many places making a flight towards the City sufficiently low for the noise of its engines to be heard. Naturally, a number of people called it a Zeppelin and bewailed the fact that it was not shot.

* * *

The "Times" correspondent, who reviewed the situation at the Dardanelles in the issue of October 26, narrates an interesting story to illustrate the spirit with which danger is faced by sailors. He tells how a bluejacket wrote home as follows :—"Mother, it is sometimes very hot out here when the shells are dropping all about you and the submarines are hovering round, and you may strike a mine at any minute. At first I was a bit scared, but I remembered the words of the padre last Sunday, when he said, 'Men, men, in times of trial and danger look upwards.' I did look upwards, mother, and if there wasn't a blooming aeroplane dropping bombs on us!"

* * *

The following appeared in the marriage columns on October 21st :—

COURTNEY—COURTNEY.—On October 20th, at St. James' Church, Paddington, by the Rev. C. P. Fynes-Clinton, rector of Old Malden, Surrey, Squadron Commander Ivon Terence Courtney, R.N.A.S., Major R.M.L.I., youngest son of the late Wm. Mc.D. Courtney, to Emily Lilian, surviving daughter of the late A. C. Courtney and of Mrs. Courtney, Clanage, Bishopsteignton, S. Devon.

[Major Courtney has done much work of high value in Belgium, including taking part in the raid on the Cockerill Yards at Antwerp, where much damage was done to German submarines. Before the war he had rendered distinguished service in the building-up of the R.N.A.S. under difficult circumstances, and in 1913 he commanded the efficient little detachment of the R.N.A.S. which co-operated with the White Army's section of the R.F.C. on manoeuvres. After many months' service in Belgium he was taken seriously ill and had to undergo a series of operations in the R.N. Hospital at Chatham, but happily he has made a complete recovery, thanks to a sound constitution. He has since been on important duty in France. His many friends, in the Service and out, will wish him and his bride every happiness.—C. G. G.]

The following appeared in the marriage columns on October 25th :—

PERKS—BAWCOMB.—On October 21st, at the Parish Church, Herne, Kent, Harry Elsey Perks, R.N.A.S., second son of Mr. and Mrs. F. J. Perks, of Grove Park, Denmark Hill, to Marjorie Jessie, only daughter of Mr. and Mrs. F. Bawcomb, of Eddington, Herne Bay.

* * *

Apropos the appointment of a Naval Instructor to Chingford R.N. Air Station, presumably to strafe the new arrivals, commonly known as "quirks," one cannot refrain from expressing the hope that he really will wop 'em, *vide* official notification.

MILITARY.

The following passage in the telegraphic dispatch dated General Headquarters, 6.15 p.m., on October 24th, from Field-Marshal Sir John French, deals with aircraft :—

On the 22nd inst. four of our aviators had engagements in the air, and in each case the enemy's machines were either forced to descend or driven away. One of the German aeroplanes landed first from a height of 7,000 feet into a wood just behind the enemy's lines.

* * *

The following casualty was reported on October 20th, without date :—

WOUNDED.

Somervail, Lieut. A., 4th K.O. Scottish Borderers (T.F.), attd. Royal Flying Corps.

* * *

The following casualties were reported on October 22nd, without definite date :—

Previously reported Missing, now reported Killed.

Wallace, Sec. Lieut. W., 5th Rifle Brigade, attd. Royal Flying Corps.

Previously reported Missing, now reported Wounded and Prisoner of War.

Binney, Capt. F. B., R.F.A., attd. Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on October 23rd, without date :—

REPORTED PRISONER OF WAR.

Stott, Capt. J. N. S., 5th Dragoon Guards, attd. Royal Flying Corps.

* * *

The following appeared in the Casualty List published on October 25th :—

Previously reported Missing, now reported Prisoner of War.

Spratt, Lieut. N. C., Royal Flying Corps.

CORRECTION.—KILLED.

Wallace, Sec. Lieut. W., 5th Rifle Brigade, attd. Royal Flying Corps, should read Wallace, Lieut. W. M., 5th Rifle Brigade, attd. Royal Flying Corps.

* * *

The following casualty was reported under date October 11th :—

Previously reported Wounded, now reported Died of Wounds.

R.F.C.—Burns, 100, Flight-Sgt. W.

* * *

The following casualties amongst non-commissioned officers and men which occurred during April and May appeared on October 26th, and have not previously been published :—

WOUNDED.

R.F.C.—Bullen, 337, 1st Class Air Mechanic G. F.; Evans, 2414, 2nd Class Air Mechanic J. R.; Leslie, 3358, 2nd Class Air Mechanic A. M.; Tindale, 833, 2nd Class Air Mechanic C. R.; Warton, 633, 2nd Class Air Mechanic R.; Wingfield, 1665, Cpl. G.

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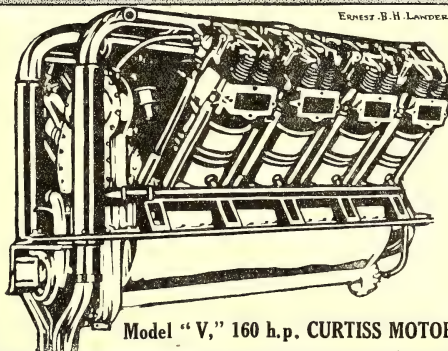
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The relatives of Lieutenant S. W. Caws, R.F.C., recently officially reported missing, have ascertained that he is now known to have been killed. He was piloting an aeroplane with Lieut. S. Wilson as observer. The latter, who is now a prisoner in Germany, has written to his parents stating that they were attacked by hostile machines, and had a great fight, lasting fifteen minutes, in which they expended all their ammunition. Mr. Caws was shot dead when they were 11,000 feet up, the bullet afterwards hitting Mr. Wilson in the leg.

An officer of the Royal Flying Corps has written to Mr. Caws' parents saying:—"He was the life and soul of our mess and quite the most popular man in this squadron. His charm was marvellous, and his delightful personality will ever live in our minds."

Captain A. V. Newton, Royal Flying Corps, formerly Somerset Light Infantry (killed in an accident in France on October 20th), was the son of Mr. Arthur E. Newton, captain of the Somerset County Cricket Club, and the well-known wicket-keeper. The "Morning Post" says that Captain Newton, who was twenty-two years of age, was severely wounded at the front thirteen months ago, and was in consequence unable to remain in his regiment, the Somerset Light Infantry, in which he held a commission. On his recovery, he joined the R.F.C. (He has not yet appeared in the casualty list.)

A Blue Book containing dispatches regarding operations in the Persian Gulf and Mesopotamia (Cd. 8,074) was issued on October 22nd. Among the names in the dispatches commended to the favourable consideration of the Government, General Sir John Eccles Nixon mentions Major H. Broke-Smith. It seems peculiar that no mention is made of any other officer connected with flying, either of the Australian or Indian Flying Corps.

A reader of THE AEROPLANE writes:—"An officer sent me rather an interesting account of a German aeroplane which was brought down a short time ago. He said: 'The German aeroplane which came down in our lines the other day was flown over here to-day by one of our officers. She is a topping machine, an Albatros with a 160-h.p. Mercedes engine. The pilot and observer were, of course, taken prisoners, and are here, too. They farked a good fight with one of our scouts and came down. As you have seen in the papers, our aeroplanes have been of invaluable service in this last show, very few Bosches ever getting anywhere near our lines.'"

An officer with the R.F.C. in France, writing to a friend says, in a letter published in part in the "Morning Post," "An amusing incident occurred last week, when some of our machines brought down a Bosche machine. As soon as it touched ground the pilot (Saxon) and the observer (Prussian) unstrapped themselves, sprang out, and fought like two dogs, until our gunners—the machine descended just behind our lines—separated them. The Prussian accused the Saxon of not attempting to get back over our lines. He hadn't an earthly; our fellows manœuvred him down like a regiment of cavalry."

The following appeared in the births columns on October 20th:—

BRAITHWAITE.—On October 18th, at 50, Kensington Court, to the wife of the late Flight-Lieut. Michael Lloyd Braithwaite, R.F.C. (killed in France, May 17th) —a son (Michael Wilfred).

[One may point out to the late officer's family, for the benefit of his son, that Mr. Braithwaite was not a Flight-Lieutenant, that title implying a naval rank. He was in fact a 2nd Lieutenant, R.F.C., graded as a flying officer.

It will be remembered that Mr. Braithwaite was killed in landing owing to engine failure when flying to lunch with some friends near Paris.—Ed.]

The following appeared in the obituary columns on October 23rd:—

TALLENTIRE.—On the 20th inst., in Flanders, accidentally killed while flying, Arthur T. Tallentire, Second Lieut., Artists' Rifles (attached to No. 5 Squadron, 2nd Wing, Royal Flying Corps), only son of Mr. and Mrs. T. Tallentire, of Glenesk, Cator Road, Sydenham, aged twenty-seven years.

Lieutenant Tallentire was gazetted to the Artists (28th Battalion London Regiment) in October, 1914.

FRANCE.

The communiqué of October 19th says:—

A party of our aviators bombarded on the night of the 17th the German aviation ground at Burlioncourt, north-east of Chateau Salins. Some hangars and shelters were obviously demolished.

The communiqué of October 22nd says:—

A group of our aeroplanes bombarded the German aviation park at Ounel, between the Argonne and the Meuse.

It is stated that the story which appeared last week that the chimney of the works of Messrs. Pilkington, of St. Helens, at Maubeuge, had been destroyed by a Zeppelin dashing into it, and that all the occupants of the machine had been killed, is merely a revival of a story which was published so long ago as last May. Maubeuge, it will be remembered, has been within the enemy's lines since the early weeks of the war.

GERMANY.

The communiqué of October 20th says:—

Eastern theatre of war—Army group of Marshal von Hindenburg—South of Riga our troops stormed several Russian positions and reached the Dwina east of Borkowicz, capturing one officer, 240 men, and two machine-guns. A Russian attack north-west of Jacobstadt was repulsed. In the district of Smolwy one of our battle-aimers shot down a French biplane piloted by a Russian staff captain and a biplane equipped with an English machine-gun.

[The whole of this section of the communiqué is reproduced because it shows the high importance apparently attached by the German General Staff to the doings of aircraft. It may be seen that the bringing down of a Staff captain and of an English machine-gun is apparently of greater importance than the capture of 240 men. The prominence given to the solitary English gun would seem to have some special significance.—Ed.]

A "wireless" communiqué of October 20th, which may refer to Flight Lieut. McKean, says:—

At Middelkerke an English flying-machine was shot down. The occupants were taken prisoners.

The communiqué of October 24th says:—

Western theatre of war. . . . Enemy aviators unsuccessfully bombarded Ostend and the railway station of Noyon.

A British biplane in an aerial fight was shot down west of St. Quentin. The pilot and observer, both officers, were killed.

German aviators attacked with apparently good effect a British camp at Abbeville and dropped bombs on Verdun. Hits were observed.

According to a report from Stettin, the steamer "Scotia," with a cargo of ore from Sweden to Stettin,

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was pursued by a submarine, alleged to be British, off Bornholm. She sent out calls for assistance, and a Zeppelin appeared, at the sight of which the submarine dived.

RUSSIA.

The communiqué of October 19th says:—

Our Ilya-Murometz aeroplanes yesterday made a raid on the station of Friedrichshub, south-west of Mitau, and dropped several dozen bombs on the buildings and rolling-stock.

* * *

The communiqué of October 20th says:—

Our Ilya-Murometz battle aeroplanes yesterday dropped at Mitau, Garrosen, Grosse Ekau, and Neugut as many as 50 bombs on establishments behind the German front.

* * *

The communiqué of October 21st says:—

Near Mitau our Ilya-Murometz battle aeroplanes dropped several dozens of bombs. According to information from a reliable source, the bombs seriously damaged the railway and enemy stores.

In the region of Olai our troops brought down a German aeroplane. The aviators were killed.

* * *

The communiqué of October 24th says:—

On Friday night a Zeppelin flew over Riga and dropped bombs on several parts of the town, but no military buildings were damaged.

* * *

The "Bourse Gazette," Petrograd, October 22nd, states that the German losses in aircraft in the Baltic region to date consist of two Zeppelins, four Albatros and twelve Taube aeroplanes, and one hydroplane. [Perhaps.—Ed.]

* * *

That singularly irritating person the Petersburg correspondent of the "Morning Post" sent, on October 20th, a glowing report concerning the German "hydroplane," as he calls it, captured between Lake Babit and Riga a week ago. He says it "has proved perhaps the rarest prize yet captured in this war." According to him, the "Novoe Vremya" says that this "plane" is one of very few of the "newest pattern possessed by Germany."

The yarn is that it came down in a pine wood practically uninjured. "Russian outposts who marked it down betimes arrived on the scene before the aviators had an opportunity to destroy even their papers. They attempted to hack the propeller to pieces, knowing that it is a matter of extreme difficulty to fit a new propeller to a machine all of whose coefficients are an unknown quantity to strangers. Happily the propeller was shod with brass, and was not ruined." This is really funny.

"It is of the Albatros type, but it is replete with improvements and novelties. The most important is a gas escapement arrangement which renders the movement noiseless."—A priceless description of a silencer.—"The engine is a Zeppelin motor of 160 h.p., bearing the mark 'Flugmotor Maibach.' The benzine tanks are of unusual capacity, giving a full ten hours' range at a speed of 80 miles an hour." This information seems to be of some value, for it shows that the Maybach people are making a light aero-engine, and if such an engine be used on Zeppelins it increases the bomb capacity of those vessels.

The correspondent's next remarks indicate immense innocence of knowledge of aircraft, for he says:—"All the necessary manipulating parts of the machinery are made luminous at night with a radium composition. There is a special newly invented level to facilitate handling the plane in darkness, and a special compass, and seats are provided for three. The hydroplane carries a searchlight, a maxim, and a rifle, with an adequate supply of ammunition, and ten bombs, five on each side, of ten pounds weight apiece." If that is all Germany's latest—and best can do there is no cause to worry.

ITALY.

The communiqué of October 20th says:—

Yesterday a flotilla of our aircraft again flew over the enemy aerodrome at Aisovizza, throwing many bombs, with results which were visibly excellent. Our aircraft returned uninjured, although fired at by many enemy guns.—CADORNA.

* * *

The communiqué of October 21st says:—

On the Isonzo and in the Carso artillery actions continue. Yesterday morning, in adverse atmospheric conditions, due to fog and strong wind, our air squadrons carried out further bold raids over the Carso. The aviation centre at Aisovizza was bombed, as were enemy columns near Birlula and Temminca, an artillery emplacement in the Doberdo zone, the railway station at Daino, and the viaduct north of that place. Our aviators escaped from the fire of the enemy's numerous anti-aircraft guns and returned safely.

* * *

The following official statement was issued in Rome on October 25th:—

Soon after ten o'clock last evening two attacks at brief intervals were made on Venice by hostile aeroplanes, which threw several bombs on the town, some of them incendiary. One bomb struck the roof of the Church of the Scalzi, bringing down the ceiling, which contained precious paintings by Tiepolo. Another incendiary bomb fell in Piazzetta San Marco, without doing any damage. Five others fell partly in the water, partly in some districts of the town, causing very slight damage.

In the course of a third attack made an hour afterwards three bombs were thrown on the town, two of which did no damage, while another, which dropped in the courtyard of an almshouse, set fire to a pile of wood. There were no casualties in all these attacks.

[The "Morning Post" says:—The Scalzi, richly baroque, is on the right side of the Grand Canal, near the railway station bridge. The church was begun in 1649 by Longhena, in 1683-89 Giuseppe Sardi added an effective façade, and the interior was restored in 1853-62. The fresco by the great decorator represented the "Miraculous removal of the House of the Virgin to Loreto."]

* * *

Unlike the London folk, the Venetians are warned of the approach of enemy "aeromobiles" in the following ways. By one long siren shriek from the A.A. Headquarters at St. Blaise, repeated by the siren at the Arsenal and by another at the Stucky Mills, and a single cannon shot from the islet of St. George. In daytime, too, a black cone is hoisted for a few instants on the signal masts at St. Blaise at Murano and the aforementioned mills. Even the deaf are thus warned, and no one has any excuse for being found out of doors.

When the danger is over a series of short shrieks and the hoisting of a black ball with a cone below it announce the fact. At night bengal flares in the national colours are shown. (Can these be for the deaf again?) The big St. Blaise siren succumbed temporarily to overwork a few days back. The Saint surely is the patron of singers. Possibly this has some connection with the speedy repair effected.

Anyhow, Venice, unlike London, is thoroughly protected by these and other means to face any probable damage from the dirigibles supposed to be intent on her destruction. Violet and red lights are found to reduce the night-glare in a safe manner.

One day recently some Taube, in the person of a fine specimen of the king of birds, visited and circled over Venice for some time. Luckily for the eagle game shooting is forbidden just now, so that he attracted much attention and no gun practice.

The bird was over two metres across the wings—from tip to tip—and is presumed to have been driven down from

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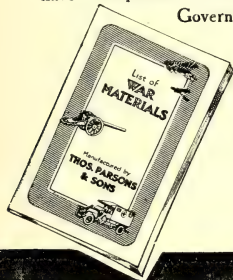
The Red Indian did not attach more importance to war paint than the Naval and Military Authorities do to-day. Government specifications are explicit and emphatic in their directions as to Quality and Shade.

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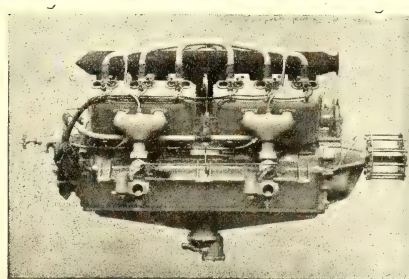


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the mountains by artillery fire. It is hoped that other potentates from the high forests will not regard this as a precedent. Visions arise of bears and wolves among the café chairs and pigeons, and hunters mulcted in fines.

As I lately hinted at the probable future value of D'Annunzio's sky-signed writings, I now note that the Austrian Government are snapping up specimens, one of which, procured at Trieste, has been already filed among the war documents in Vienna's Court Library. Bouquinnistes please note.

Captain Russo is transferred to the Aeronautical Corps, and the promotion of the record-holder Sergeant Brach-Papa to be Sec. Lieutenant is worthy of honoured mention.

A correspondent who exaggerates the writer's inside knowledge of British fauna writes to ask if hornets hibernates. I believe he has German proclivities, and, anyhow, can only refer him to that nation's Admiralty, who no doubt know all about it.

Another one, an unlucky flying man, recently slaughtered by an erring bomb a non-combatant pig, and complains of being called "The Parricide." I say, handsome is as, etc.—T. S. HARVEY.

BELGIUM.

It was reported from Amsterdam on October 19th that a daring raid was made over Belgium on Sunday, October 17th, by three French aviators. Bombs were dropped on several German forts in the vicinity of Brussels and Louvain, and on a German aircraft shed near the French frontier.

The "Echo Belge" (Amsterdam, October 24th) reports that Allied aviators have made another raid over Belgian Luxembourg. At Marche bombs were dropped, which killed 13 Germans, and injured 8.

On October 10th Allied aviators dropped bombs on Herminem, where a bridge across the Scheldt was hit. Bombs were also dropped at Lokeren and Termonde, doing considerable damage and killing or injuring several Germans.

This is confirmed by the "Gazette de Hollande" (Amsterdam, October 22nd), which says that Allied aviators have bombarded the big bridge across the Scheldt called the Count Wurttemberg Bridge, at Termonde, completely destroying it.

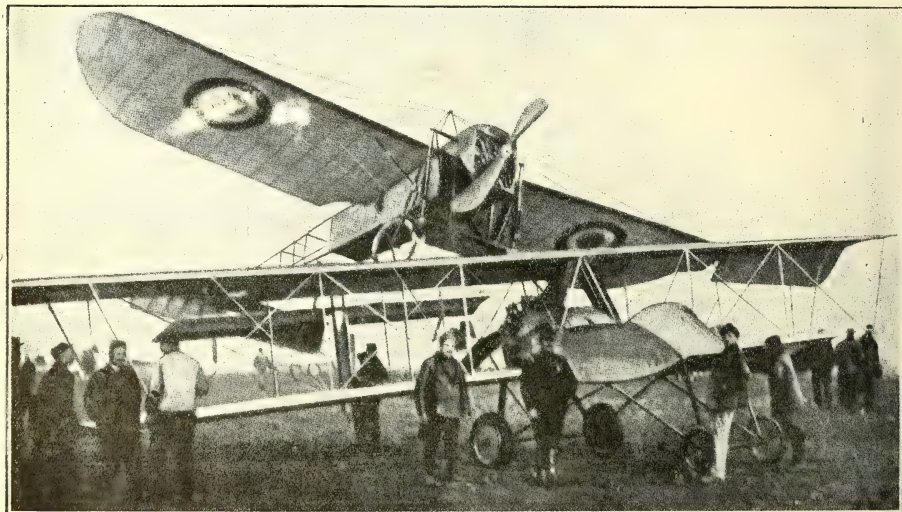
The "Telegraaf" (Amsterdam, October 25th) publishes a proclamation by Governor von Bissing, Governor of Belgium, accusing the inhabitants of communicating to enemy aviators the location of buildings in which German troops are quartered, which have been frequently attacked by aviators. The proclamation says that if attacks continue, General von Bissing will quarter German troops in the houses of citizens, and the "promise made that officers and men would not be lodged in citizens' houses hereby lapses." This promise also lapses if after October 25th arms or ammunition are found in the possession of inhabitants of Greater Brussels.

SWITZERLAND.

It has been officially announced that the Federal Government has ascertained by investigation that the attack on the 17th inst. on La Chaux-de-Fonds was made by a German aviator. The Swiss Legation in Berlin has been instructed to protest vigorously against this fresh violation of Swiss neutrality, and to claim satisfaction and the punishment of the guilty aviators, as well as an indemnity for injuries to persons and material.

The Political Department of the Swiss Confederation published the following communiqué on October 25th:—

The German Minister to-day informed the Political Department that a military inquiry has proved that the aeroplane which bombarded Chaux-de-Fonds was German, and that the pilot had completely lost his way, and believed that he was over French territory.



AN EXTRAORDINARY LANDING.—This photograph, taken from a French paper, shows an astonishing coincidence which happened recently at a French aerodrome. M. Bouvier, on a Voisin, was landing when a Blériot, gliding down at the same time, made for the same spot from a higher level. Neither pilot saw the other, and the two machines came to rest simultaneously in the position shown and practically undamaged.



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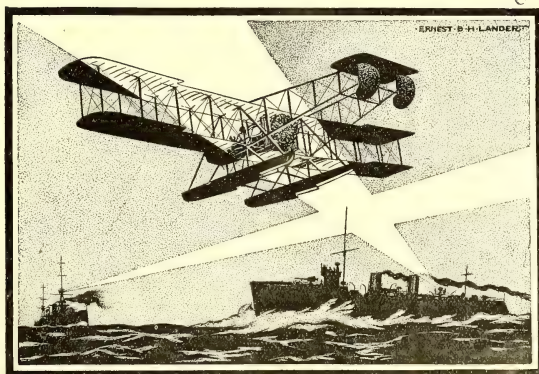
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The pilot and observer have both been transferred and punished, and German air squadrons have once more been warned against flying over Swiss territory. Aviators have also received the strictest orders not to throw bombs except when they are without any possible doubt over enemy territory.

The German Imperial Note expresses to the Federal Council its deep regret for the incident, and also to the injured persons, and further promises to pay an indemnity for the damage done and in recognition of the moral wrong. A Note in this sense has been handed to the Swiss Minister in Berlin.

MONTENEGRO

The Italian papers have it from Cettigne on 18th (delayed) that an Austrian aeroplane with two aboard was captured near Pleolje.—T. S. H.

U. S. A.

On October 10th, Mr. D. H. McCulloch made an attempt for the Marine Trophy, which Mr. Glenn H. Curtiss has offered to the aviator who makes the biggest mileage during a 10-hour flight before October 31st on a hydroaeroplane. Mr. McCulloch started from Hammondport at 8.55 a.m. on a standard 100-h.p. Curtiss flying boat, and flew down Keuka Lake and back ten times, only stopping once or twice for fuel and food. During part of the time a stiff north-west wind was blowing, but the journey was made without incident, most of it being at an altitude of 4,000 feet. The average speed of the machine was 61 miles per hour.

Previously Mr. McCauley had flown 300 miles at Toronto on a 160-h.p. boat, and Lieut. J. H. Towers, U.S.N., flew 392 miles in the neighbourhood of Annapolis. The trophy is valued at \$5,000, and the competition is under the aegis of the Aero Club of America.

Other entrants are as follows:—Raymond V. Morris, 160-h.p. Curtiss flying boat, representing Aero Club of America; Lawrence B. Sperry, 80-h.p. Curtiss flying boat, representing the Aero Club of America; Robert Glendinning, 100-h.p. Curtiss flying boat, representing the Aero Club of Pennsylvania; Glenn L. Martin, of Los Angeles, 150-h.p. Martin seaplane, representing the Aero Club of America; Clarke Thomson, Curtiss flying boat, 100-h.p. motor, representing the Aero Club of Pennsylvania; E. K. Jacquith, Curtiss flying boat, 100-h.p., representing the Aero Club of America; W. H. Kendrick, Curtiss flying boat, 100-h.p. motor, representing the Aero Club of America.

* * *

The "Aerial Age" says:—

The 140-h.p. eight-cylinder Sturtevant aeronautical motor which the U.S. Naval Department has specified for installation in the dirigible balloon recently constructed by the Connecticut Aircraft Co. has been completed. The motor has been thoroughly tested, and is now being shipped to the U.S. Navy Aeronautic Station Pensacola, Fla., there to undergo its official trials in the balloon.

The engine is of the four-cycle, water-cooled "V" type, having a bore of 4 inches and a stroke of 5½ inches, operating at a normal speed of 2,000 r.p.m. The motor delivers 140 h.p. at 2,000 r.p.m., and at 2,200 r.p.m. actually develops 147 h.p., these results having been obtained from a water absorption dynamometer to which the motor was connected direct.

The reducing gear which is ordinarily used to obtain the proper speed of the propeller shaft has been dispensed with, and a special extended crankshaft provided to which the wheel of a Sturtevant No. 11 Multivane fan is attached direct. This fan is capable of delivering 3,000 c.f.s. against 1¼ inch of water at 8,000 r.p.m., and will be used for equalising the pressure in the ballonnettes necessary for the proper operation of the dirigible. In addition, the motor will operate twin propellers of the swivelling type.

The official trials will probably take place some time during the latter part of the month, and it is expected that some interesting results will be obtained.

A twelve-hour non-stop run was recently made [in England, according to the A.A.—Ed.] on one of these motors running under full load and full throttle, the motor being connected to a dynamometer. At 2,000 r.p.m., a little over 140 h.p. was recorded, and at 2,200 r.p.m. 147 h.p. was developed. Examination found the motor to be in perfect condition at the end of the run.

The Sturtevant Company are now in a position to accept large orders, and can guarantee excellent deliveries, beginning two weeks from receipt of order.

* * *

At the request of Mr. Thomas A. Edison, Chairman of the new Advisory Committee of the Navy, a body composed entirely of aeronautic engineers and experts has been organised to co-operate with the Committee. The Organisation will be known as the American Society of Aeronautic Engineers.

The officers and directors of the new Society, selected subject to approval at the first regular meeting, are prominent aeronautic engineers, as follows:—

President : Henry A. Wise Wood.

Vice-Presidents : Orville Wright, Glenn H. Curtiss, W. Starling Burgess, Elmer A. Sperry, Peter Cooper Hewitt, and John Hays Hammond, jun.



Capt. I. F. Fairbairn-Crawford, R.E. (T.E.), Manager of the Aviation Dept. of Armstrong-Whitworth's, and formerly a famous athlete, who recently took his certificate at the Ruffy-Baumann School at Hendon.



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Four additional Directors will be Army and Navy aeronautic engineers, to be selected and appointed by the Army and Navy Departments. The Smithsonian Institution, the Post Office Department, the Weather Bureau, and the Bureau of Standards each are invited to appoint one Director, and the Massachusetts Institute of Technology and the University of Michigan—the only two educational institutions in this country which offer courses in aeronautics—each are invited to appoint one Director.

The Post Office Department was included in consideration of the fact that an important development of the coming year will undoubtedly be the employment of aeroplanes for carrying mail to places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours. To make the mail-carrying service efficient will require knowledge on the part of aeronautic engineers and aeroplane constructors of the requirements of the Post Office Department, and on the part of the Department of the construction and capabilities of aircraft.

Almost two hundred engineers, aeroplane constructors and experts in different branches of the science of aeronautics, representing different aeronautical organisations, have been elected charter members to membership in the American Society of Aeronautic Engineers.

A score of aeronautic engineers, scientists and expert aviators who are not included in this list are being invited to join, so as to bring into the membership of this Society all the aeronautic talent of this country, and to afford to the Navy and other branches of the Government the co-operation of their combined efforts.

The American Society of Aeronautic Engineers has its temporary headquarters at 297, Madison Avenue, New York.

AUSTRALIA.

The Melbourne "Age" of August 25th says that the first of the six Renault type aeroplane engines ordered locally by the Defence Department was expected to be delivered during the following week. It was to be fitted immediately to a B.E. biplane which has been built for it at the Werribee factory and school, so that, all being well, the first completely Australian-built machine has now been flown.

* * *

It is reported that Capt. Harrison, of the Australian Flying Corps, has visited the Gordon Technical College with a view to ascertaining whether its equipment would be of service in constructing aeroplanes. A report will be made in due course.

* * *

Mr. Harold Treloar, the Australian aviator, who is attached to the Royal Flying Corps and fighting in Turkish territory, writing to a Ballarat friend, says :—"Owing to the aeroplanes we were able to locate all Turkish trenches and guns, and then our artillery made things much too hot for them to hold.

"I have been on reconnaissance trips up to ten miles from our base, taking nearly two hours to do the trip. We followed up the retreat, and saw no forces left to ambush our troops. We propose to rest as long as possible. We fly at 5000 or 6000 feet, and can see miles away."

FROM DENMARK.

The Danish correspondent of THE AEROPLANE writes :—

The following German war letter is worth dealing with at some length among the many feldpost letters having been published from aviators :—

A German aeroplane undertook a daring flight to West. The task was : four bombs on D—. Weather conditions tolerable. A few single clouds came over the country from south-west, else the sky was clearer than we are used to in Flanders. It is half-past two when the aeroplane starts. A wind blows so slight from south-west that it does not diminish the speed of thirty metres per second of the aeroplane much. The latter must carry out some circles to attain the war altitude; the engine noise dies away, yet the trained ear perceives suddenly something unusual. "Nanu; the engine has missed up there." The man with the telescope is called. He sights the aeroplane with twelve times' enlargement—he has another, magnifying forty times, but then the fast bird should disappear too quick of the range of sight. He announces : "The aeroplane drops somewhat." Indeed, in a few seconds the engine stops with a hobbling noise. The engine-breakdown is followed by a glide, and in a few minutes the machine alights on the aerodrome. The observer swears at the "damned box."

The foreman, having worked the whole night, arrives laughing, his laughter resembling that of a well-intentioned beast of prey. That is his love of fighting, when he goes to work with the motor. The mechanic is a fighter too. Foreman and pilot climb between the seats and the engine, while a soldier turns the propeller slowly. A pipe had got stuffed—the petrol was unclean—mixed with too much paraffin war-petrol. But in half an hour all is corrected. [This point should interest the R.F.C.—Ed.]

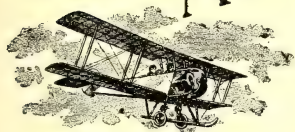
When the foreman starts the engine this time you hear that the humming will last. Again the observer climbs his seat in his brown jacket, with the map hanging on his chest, and with the enormous sized goggles still placed on the safety helmet, and then—pschrrrr—already they rise above the field, above the poplar avenue, above the village, returning high up. The clock goes to four; if we were only in D—, where we can see the fire on the aerodrome from far off. We take the direction on the enemy, soon have the pleasure of the small white clouds, sometimes fall about 60 metres, which I correct at once. If a split of a shell should hit the working pumps of the motor, lock the petrol-tank, or smash the revolving propeller—then—well then—the German soldier does not think of "then." He undertakes what must be done, and what "then" happens—well, he shall see.

The flight is continued. The front turns up, the front is crossed, the front is left behind. No hostile aviators appear to engage with us. Altogether you saw scarcely an English airman—and no French at all—during January and February in Flanders. The rumour circulated with us that the French aviators striked, for you must know they are not soldiers in the real meaning of the word like ours. They do not fight for their country, drawing small salaries, like ours and all gallant men—they are paid for each flight; the sum was even mentioned that they receive per flight. What do you think of such warriors? We do not understand—no—we are Huns. Then a quarrel of salary was told once to have broken out—France's heroes of the air striking then. Perhaps it is even true. It might be. [This is a really funny story! What do our French friends think of piece-work flying? Don't they wish they could get it? Some would soon be rich men.—Ed.]

D— is sighted! There in front of the railway station are the tracks—if we could prevent trains leaving for some days! The aeroplane banks, the first bomb is dropped, the observer leans out, but unfortunately the

THE AIRCRAFT SUPPLIES COY

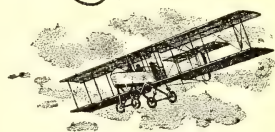
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lower plane hides just then the place where it falls. We bank further. The place before the railway station is again visible. The aeroplane has finished the circle and is now 100 metres lower; the second bomb drops. This time the observer keeps the sight of his mark. A grey-black cloud rises between the two black pieces running against each other. Another circle and the third bomb. Once more the heavy broad cloud—somewhat to the side of the real stripes, yet its force must have torn out some of the railway body. Now the last circle. The observer sees that they have this time drifted too much aside to be able to hit the railway, but to left lies a big black roof, much bigger than the railway station itself—it must be some shed—a shed contains tools, men, guns, munitions or stores—drop the last bomb on the big black roof.

One moment's anxious expectation, and a thick, black smoke rises—much more than before—something has been hit that smokes vigorous. Well, he can report that he has disposed good of his bombs. But meanwhile twilight has come. Only somewhere in the distant a fire is blazing, and far off to south red-yellow muzzle-fire lightens from the guns on both sides of the front. The observer waves to east, then he leans back in his seat to rest for a moment after the excitement of the last minutes. Then he must patrol again after the distant fire on the flying-ground at home. He closes his eyes for a moment, breathing deep, and it is to him as if he almost slept; he seems not to hear the engine noise, which stops indeed suddenly. [And now follows a general description of feelings and proceeding by a forced landing in enemy country.] The big quiet of the inevitable comes over us.

The observer takes his map out of the holder—almost all positions of the own front have been marked on it, especially the heavy batteries—tears it to pieces, throwing them out in the air. The paper of the aeroplane with the order for this flight being dealt with in the same way. Even two pages of a diary being remembered, which he wrote that morning, and a letter, just commenced, when the dispatch-rider had called him to the aerodrome. The same proceeding with them.

Both of us now looked down and still distinguish part of the Yser Canal in front. It ruzzles in the planes; firing is heard; we are so low that the enemy has discovered us in spite of the darkness. And suddenly the ground turns out below; I pull the elevator back and the speed is still so big that it obeys for one moment. We glide plain over the ploughed field, alight, glide another time, and roll over the rough surface. I open the petrol-gauge ready to put the aeroplane on fire, when the English appear. But no one appears to take us prisoners.

As if a severe ban got suddenly broken, an intolerable fire starts suddenly; we plunge down on the ground close to the aeroplane, and soon we understand our position. We are between the lines, with the English trenches to right, those of the Germans being to left. The bullets penetrate, the aeroplane creaking, sometimes mixed with the noise of a breaking wire.

Only slowly the violence of the fire diminishes, both sides firing less. We raise our heads a little and observe that we are about 50 metres off the German front, that of the enemy being from five to six times farther off. It is almost dark, but still the English fire single shots, and as most hit the machine, they have still their mark fixed. We rise cautious on our knees, but in the same moment a lightening rocket is fired over there, and when exploding is followed by a shower of shots, so that we are bound to throw us down again. But the white light has even shown us a ruin, the remaining of a house, destroyed by the shells, close by to left. We must reach there, as we might then succeed in communicating with our side. Perhaps we should even be able to rescue the aeroplane.

Lying down, we push us forward troublesome with hands and feet, worse than a four-legged animal, "like a lizard with broken legs," as a merry soul said once.

By the next lightening rocket a machine-gun fires over the field, and by the third one we see the aeroplane fall on its side and crumble down—it can scarcely be saved. We really reach the ruin, where we can right somewhat, though shells hit the still standing brickbats. We ascertain that we shall be able to get to our trenches, and now the honest Württembergers send up lightening rockets too, who feared by doing so earlier to show the enemy the position of the aeroplane clearer only.

Again we lie down and try to advance towards the German lines, but soon notice the impossibility thereof, as the enemy has by the long position war corrected their fire so well that they take even the country somewhat behind the little protection under fire from two advanced side points. Thus we lie for one hour, two hours, advancing a few metres, when the shooting slackens, often only but a few handbreadths. We understand that the whole night may pass before we can jump down in the trench. And to lie by day in the open field!

The radium watch tells a horrible tale of the passing of time. When—to our right—a little red light appears, it swings slowly. And suddenly a low voice sounds from the direction of the light: "Come here, Mr. Lieutenant! Here, here, Mr. Lieutenant." The instruction is followed like an order; we creep to the accompaniment of falling shells in the direction of the light, where the voice keeps repeating: "Come here, Mr. Lieutenant! This way, Mr. Lieutenant!" When we approach the light, we recognize it to come from an electric lamp, held by a hand of a sub-officer, sitting in a shell hole. "Down here, Mr. Lieutenant." While the shots are now fired somewhat higher, we pass eastwards to friends from one shell hole to another, till we plunge headlong down the trench. At once electric lights lighten at us from astonished puffy and bearded faces. Rescued!

But next morning the English had the pleasure of converting the Albatros to a ruin heap, while the white-beamed Iron Cross projected till the next day.

GOOD ADVICE FOR BEGINNERS.

Mr. O. W. Thomas, of the Thomas Aeroplane Co., Inc., of Ithaca, N.Y., intimates that the demand from the British and French public for his booklet entitled "Instruction in Aviation for Beginners" has been so great that a special edition has been produced in this country, and may now be obtained from him on application for the sum of sixpence plus one penny for postage. His address is "The Croft, Denbridge Road, Bickley, Kent." The booklet is worth considerably more than the sum mentioned, which is only charged to cover cost and to avoid frivolous demands for it.

WAR WORKERS' RECREATION.

On Saturday of last week, October 16th, a football match was played between teams drawn from the employees of Handley Page, Ltd., and the British Caudron Co., Ltd., at the H.P. Ground at Cricklewood. The visitors lost by four goals to one, three of the H.P. goals being scored by Mr. Keats (c.f.) and one by Mr. Gillard (in. left).

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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

CONCERNING THE MERCEDES.

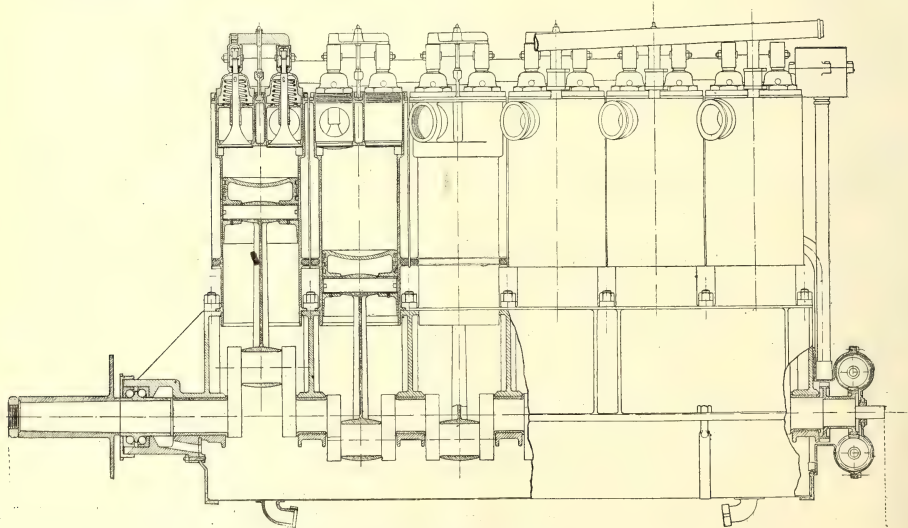
One of the chief troubles of an author by pennyworths is that he so seldom dare yield, for the sake of the book-to-be, to the constant temptation to be a journalist, and garnish his too-solid meat with the green herb of to-day's news interest, which survives no to-morrow. Otherwise, I would dwell upon the hitherto agreeable mystery of the Mercedes aeromotor: done away with by some person or persons unknown. You may remember how some lucky ones beheld the two-thirds edition of it, before the war, in the chassis with which Lautenschlager, having sneaked into France for clandestine road-practice, virtually stole the last Grand Prix. Then for a week or so, how it was displayed to the curious in Long Acre. And then, as Mr. Gordon Watney did not buy it—well, perhaps it disappeared with those Russians who came through London via Llantysiliogoch to join the notable legions so ably led by Mr. Arthur Machen at the Battle of Mons. Or perhaps the Admiralty—who are great hands at getting hold of the most expensive cars—tossed up for it with the friends of Germany at the Foreign Office, who wanted a memento of a characteristic German triumph. You never know. Any way, I don't. I am only content to believe—just as I did in those Russian long-bowmen—that it is used on about four out of five of the Hun warplanes, in six-cylinder form: although ever since the last Aero Show you could not buy a Benz or an Argus motor for any money. Yet, following the manner of journalism in its regular vogue of sheer surmise, I dare say we may yet see its counterpart numerously in British aeroplanes. That would be just the sort of thing our misrulers would love to attempt. Let us wait and see if I am right.

At any rate—to rein down from fancy to the jog-trot of fact—in this Mercedes aeromotor we have a six-cylinder water-cooled motor with overhead valves and cam-shaft, the cylinders being jacketed in pairs, and having a content of 120 mm. by 140 mm. as the respective bore and stroke measurements. One, that in the mass, displays no

more originality of type than any other Teutonic engineering creation: and withal is as expensively built, as thoroughly uncommercial as to production, as any motor ever designed, albeit no worse in this regard than many others produced west of the Rhine. Yet one, that in detail, shows to a fair degree the thoroughness of treatment, if not wholly the clear conception of purpose, that have placed the Germans—where they are.

Its construction is at least expensive—so much as to disqualify it as a model that it would be judicious to imitate—inasmuch as its cylinders, which seem to be cast in pairs, are really made separate, machined out of solid steel until the walls are extremely thin, and only maintained at adequate strength by the ribs that are allowed to remain on the upper two-thirds of the barrels thus formed. So far, at least, nothing could be better for durability as well as reliability. But then each pair of cylinders has a thin sheet steel jacket slipped on and acetylene-welded solid to the valve-entries—which after being screwed into the cylinder heads are likewise welded thereto—to the studs that support the housing of the overhead cam-shaft, to the induction and exhaust passages, and finally to the lower trunks of the cylinders. All, it may be remarked, in the manner originated by Costantini of Paris for the miniature Herdtlé-Bruneau cycle-motor. Whether any provision against rust is provided, such as copper-dressing the cylinder trunks and the interior of the jacketing, I do not know. But as something of the sort is more or less essential, it seems highly probable.

However, the designer of the Mercedes aeromotor has gone one better than any other, in the vertical type, in one detail that originated with the Gobron marine motor; that is, by uniting the water-jackets at the top and between, with short flexible joints: which obviously give a clean run-through to a single water outlet, and thus not only do away with piping-encumbrance, but enable the cam-shaft housing to be snugged down close, so that the rockers may be operated above it. Precisely in the manner



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suggested in the recent discussion as to overhead-valve gear-practice methods. With the advantage, of course, that an oil-bath cam-shaft housing is obtained—which in this case is drained off by a large return-oil-pipe, fitted with a breather and leading back into the crank-chamber—but with the corresponding disadvantage that the entire housing and cam-shaft have to be shifted bodily to get at any valve. Nevertheless, the rocker motion is so related to the angle at which the valves are mounted—about 25 degrees—as to be directly component: that is, setting up no side thrusts, but only a direct downward pressure in the line of the valve stems.

So far, well; for the immediate result is a perfectly domed combustion-space. But the indirect result—no less certain—is that this close-in, semi-diagonal valve-setting throws away most of the advantages so far gained, by cramping the available valve area, automatically. Consequently, the valves have no greater diameter than 56 mm. and a lift of 9 mm. The road-racing four-cylinder prototype of this model, one remembers, had four valves per cylinder: but then it was intended to run at 2,000 r.p.m. and more—actually did so—while a mere 1,400 r.p.m. suffices for aeroplane work; at any rate, with most tractors; although, strictly speaking, a better and more smoothly-variable speed range is assured from a high-speed V or Y-type duly geared down. And, again, the reason that the cylinders are jacketed in pairs, instead of as one, or singly, is not at all, as has been alleged, that both were made off the same design; or even that an aeromotor cannot do as well with a shortish and stiffer crank-shaft, as any car-motor: but merely that unless ball-bearings are fitted, longer journals are needed for the unrelenting work aloft than the intermediate spacing between close-set cylinders properly allows.

The Mercédès valve-gear mechanism, as an example—or variation—of the somewhat rare current practice in this regard, is one of the more interesting details of the design, chiefly because of its evident light weight. What exactly that weight may be is hardly ascertainable in the circumstances. But considering that the central cam-shaft and the lay-shafts pivoting the rockers are all three bored hollow to form oil conduits—the lay-shafts having Durit connections between their sections—that the oil-bath cam-shaft housing is of the lightest cast steel, and that the rocker-covers are of aluminium, the total weight can hardly exceed seven or eight pounds, and may even be less. The rockers themselves are, of course, solid—apparently stampings—but their light H-section indicates that even their aggregate weight cannot amount to much; albeit their very function assures their being fully strong enough. In one detail, however, their design is worth special notice; this being that their outer ends are split, yet at the same time threaded to take screw-studs that are in direct contact with the valve-stems; and so form readily adjustable tappets which are locked by set-screw bolts passing through the split ends of the rocker arms. Quite usefully, too, the coned valve-springs—*ressorts à boudin*—are set on in the reverse of the usual way: that is to say, with the apex of the cone downwards, next to the cylinder-heads.

Except for the size of the housing, there is nothing unusual about the cam-shift drive; for the conventional vertical shaft therein contained both drives, and is driven, by bevel gearing; operates a direct-coupled water-pump from its lower extension; and the two magnetos by a transverse spindle rotated by further bevel gearing about half-way up its length. For the rest, this end of the crank-shaft carries a revolution counter, and the cam-shaft drives an air-pump to maintain pressure in the petrol-tank by means of an eccentric. All in the thoroughgoing yet unoriginal manner one might expect from a German engineering production. One may therefore suggest as a practical point that the revolution counter would be far more readily visible if also driven—through gearing—

from this end of the cam-shaft; and that pressure feed is not—nor ever has been—conducive to economical petrol consumption; one of the chief points to study in aeromotor design. Here, indeed, the Mercédès aeromotor does not make a good showing, as its hourly consumption is anything from 40 to 50 per cent. greater than has been commonly achieved in others fitted with well-known French and British carburetors, themselves nothing remarkable in point of sheer economy.

As to the method of valve-insertion, and the provision made therefor—or, rather, hopelessly overlooked—in my opinion, nothing could be worse. Not only have the valves to be inserted from within the cylinder—which is bad enough, even when a large detachable ring-nut seating on the other side enables the valve to be passed through, in the fashion of the Beardmore-Daimler and others—but the entire cylinder has to be unshipped in order to dismount either valve. Could anything, I ask, be more hopelessly at variance with the necessities of daily aeromotor use? Especially in motors of large size and high power. And so far from this arrangement being general, as alleged "in all modern racing motors," it would be difficult to find one, even in the famous Brooklands megatherium class, that embodies it. On the contrary, as valve-breakage in such circumstances is not only a constant risk, but a not at all uncommon occurrence, one would not only prefer valve cages—if only because they are detachable without dismounting any mass parts—especially such as the present Bayard and former Pipe motors display, but would welcome the most conventional of motor-car adaptations. Really even the genius of Cannstatt, such as it may be, cannot be wholly right against the unanimous practice of the entire motor designing world west and south of the present Teutonic frontiers.

(To be continued.)

A MAGNETO FOR 12-CYLINDER ENGINES.

The introduction of the 12-cylinder engine has brought in its train the Dixie 12-cylinder magneto. It is, so far as is known, the first practical commercial 12-cylinder magneto to be offered, having a single unit distributor. It is to be known as the "Dixie 120" and in construction it follows closely that of the "Dixie 40." There is no rotating wire wound armature, nor usual high tension collector spool with its attendant brushes, so complication is eliminated.

The distributor, as shown in the accompanying photographs, is no larger in diameter than the usual 4-cylinder distributor. It has, however, two rows of contacts, 6 contacts in a row, and the spark plug cables are connected to these contacts by means of the usual outside terminals. Travelling round and wiping over each row of contacts is a separate brush, and connected to each of these brushes is an auxiliary brush so arranged that the high tension current is connected first to one travelling brush and then to the other. At no time are both brushes alive, and consequently the separation of the various contacts in the distributor is maintained at such a point that jumping and misfiring is prevented.

It is also interesting to note that the two rotating brushes in the distributor carry the same polarity of current, and therefore there is no tendency for a breakdown to occur between them.

From the foregoing it will be seen that in this 12-cylinder distributor, there are four rotating brushes carried on a single movable distributing finger attached to the distributor gear thereby eliminating all double distributor blocks or the necessity for complicated brushes or other mechanism in the high tension circuit between the distributor and the generating windings.

Particular attention is called to the breaker used in the "Dixie 120." These contacts operate at 12-cylinder engine speeds in excess of 300 times per second, the vibrations of the breaker arm exceeding in speed the vibration of the

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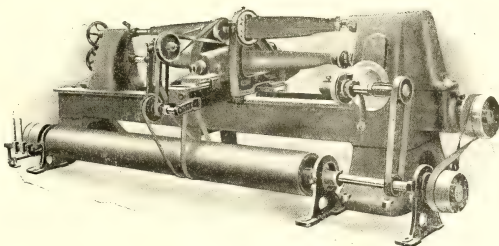
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middle C string in a piano, in fact, the magneto when running at maximum speed gives a clear musical note.

The breaker arms are of special construction carefully balanced, and the hammer blow on the platinum points is eliminated by an ingenious arrangement of the various parts. The breaker arm bearing and actuating cam are self-lubricating. The latter has 4 lobes, or bumps, the magneto producing 4 sparks per revolution.

The magneto is geared to the engine $1\frac{1}{2}$ times engine speed, and by an ingenious device, practically any degree of advance or retard is accomplished, the intensity of the spark being the same at either advance or retard for any given engine speed. This feature of the Dixie magneto is unique, and is particularly desirable in connection with high-speed multi-cylinder engines where excessive spark range is required.

In mounting dimensions, the "Dixie 120" conforms to the S.A.E. standard. In fact, it is not as large as the conventional 4-cylinder magneto. Provision is made for cutting out the ignition by means of an ordinary switch connected to a terminal carried on the lid of the breaker box. The photographs show the external appearance of the machine.

The design of a 12-cylinder magneto has presented some rather difficult problems. It is impracticable to arrange 12 contacts in a distributor in a single circle for the diameter of the path swept by the distributor finger would be so great that the wear of the distributor brush or brushes would be excessive. Another objection to this course is the great size of such a distributor and the unwieldy design necessary to incorporate it. The next alternative is to use two distributors, one on each end of the magneto, but the complication and inherent difficulties of such a design are obvious. The "Dixie 120" has solved all of these problems. It is no larger in diameter than the usual 4, and at the same time the separation of the various spots or contacts is ample to prevent any jumping of the high tension current.

Owing to the fact that the "Dixie 120" has no rotating wire wound armature, or other parts that would not stand up under excessive speed, the Dixie may be driven at speeds of 5,000 r.p.m. indefinitely, at which speed 20,000 sparks per minute are produced, and these are in perfect synchronism and of the same intensity at any given engine speed with the magneto to full advance or retard over a spark range, usually of 40 to 60 degrees. It is thought this is a new high record for synchronous spark production which has never been equalled even by battery timers in which, of course, the spark is variable depending upon the condition of the battery.

It must be borne in mind that a twelve-cylinder four-cycle motor fires six cylinders per revolution of the crank-shaft, and that such a motor sometimes reaches a speed of 3,000 r.p.m.

To get the required number of waves of current to fire this number of cylinders, it is necessary to drive the magneto at $1\frac{1}{2}$ times the speed of the crank-shaft. Hence the interrupter must function at the rate of 300 times per second at 3,000 motor r.p.m.

The difficulty of having to overcome the inertia of a breaker mechanism which must operate at such a tremendous number of current ruptures per second has caused the designers of the "Dixie 120" to double up on the number of working parts, this halving the number of movements of each part. Hence the unique design consisting of a pair of breaker bars, one superposed on the other and acting independently, the motion being transmitted by a double cam side by side the rotor shaft, with the cam faces acting alternately first on one and then on the other bar, rupturing the primary current delivered to a common "anvil" containing two independently adjustable platinum pointed screws.

The casing of the "Dixie 120" is arranged to be oil and waterproof, and the machine is particularly beautiful in design and construction. It has already proved itself to be remarkably efficient. In one test the very best results that could be obtained with battery ignition showed 65 h.p., while with the "Dixie 120" $71\frac{1}{2}$ h.p. was obtained, thus again demonstrating the superiority of the Dixie magneto over battery equipments.

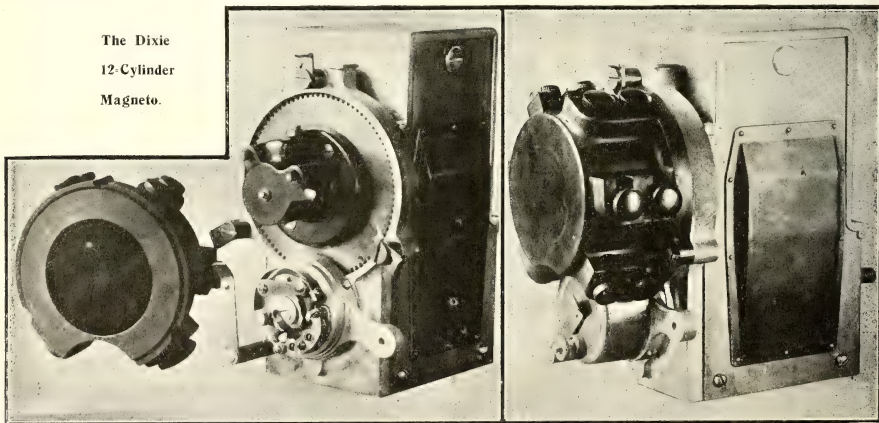
It is worthy of note that the Dixie Magnetos are now supplied in no fewer than nine varieties.

The sale of the "Dixie 120" in Europe is controlled by the American Supplies Co., Ltd., of 162, Great Portland Street, London, W.

A CHALLENGE.

The proprietors of the Mann biplane issue a challenge which might bring about a sporting event in the near future. They are willing to demonstrate the speed of the Mann biplane, which they claim to be the fastest two-seater pusher in the world, and have specially invited competition from any other two-seater "pushers" in this or any other country. A sum of £10 is to be deposited by both sides, the trial to take place over any course of not less than thirty miles, round pylons excepted, a passenger to be carried, before a committee consisting of representatives of aeronautical papers.

The Dixie
12-Cylinder
Magneto.



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SHERLOCK HOLMES AT HENDON.

[One hopes Sir Arthur Conan Doyle will not see this.—Ed.]

It was Saturday afternoon, October 23rd, 1915, and a chill autumn day, when I called at the flat in Baker Street. Sherlock Holmes was reclining on some cushions near the fire, a violin in one hand and his hypodermic syringe in the other, and smoking his favourite briar. As I entered he turned his clear-cut, pallid face towards me, and with one of his characteristic gestures indicated an arm-chair and the sideboard. As I helped myself to the decanter he remarked: "I see you have come by 'bus from Piccadilly Circus to invite me to accompany you to the Hendon Aerodrome."

Accustomed as I was to his uncanny powers of perception, I turned in amazement. "How on earth did you know that?" I exclaimed.

"My dear Watson," was his reply, "nothing more simple. The 'bus ticket you still have in the cuff of your overcoat indicates your journey plainly. You are wearing your strong golf boots, but not the clothes in which you usually play. Thus, you are going into the country, but not for golf, and yet not for a long walk, or you would not have brought your overcoat. You are evidently prepared for a further 'bus-ride, and expect to stand about in the cold. In your right-hand coat-pocket I perceive you carry the current issue of *THE AEROPLANE*, while from your vest-pocket protrudes a small blue card which I recognise as a complimentary ticket for the Aerodrome. These tickets admit two, and knowing your dislike for solitary outings, it is easy to deduce the fact that you wish me to go with you."

"This is wonderful!" said I.

"Not at all," he replied. "You know my method. It is based on the observance of trifles. To a carefully trained mind the analysis and classification of details becomes a habit. The art of deduction follows as a natural consequence. . . . Besides, you wrote on Thursday asking me to come."

Throwing aside his purple dressing-gown, he put on outdoor clothes, and we started for Hendon. It was a calm day, and a mist hung over the countryside. As we left Kilburn and Cricklewood behind us, Holmes seemed to become eager and more alert. I noticed him inhaling deeply, and when at last he detected the odour of Castrol in the air and realised we were nearing our destination his pleasure was apparent. It was his first visit, and I was curious to note his impressions.

As we walked into the enclosure he drew my attention to a young man who was passing, and whispered: "There goes Osipenko, who has just been flying a G.-W. box-kite, accompanied by a highly-strung lady passenger who had never been up before."

There was nothing to distinguish the person he had indicated from an ordinary member of the crowd, and I asked for an explanation.

"My dear Watson," said Holmes, "he has just come from yonder group of machines. He is not a passenger, for there is no sign of exhilaration and pride—no flushed cheek, no rushing to tell his friends what it felt like. He wears no expensive leather garments, and his cap is in the normal position and without goggles; therefore he is obviously not a pupil. Thus it is easy to deduce that he is a plain, business-like pilot. His machine is of what is known as the 'pusher' type, for his face bears no marks such as goggles make on those who fly high-powered tractors or monoplanes. The slight bagginess at the trouser-knees suggests a high machine, not too easy to climb into, such as a G.-W. box-kite."

"You astonish me!" I exclaimed; "but how about the lady passenger?"

"On the second finger of his right hand," said Holmes, "I observed an ink-stain, still moist, which showed he had just given his autograph to a passenger. There was

a far-away smile in his eyes, and his collar was crumpled at the back. The passenger was obviously a lady of nervous temperament who had never flown before, hence the sudden impulse to throw her arms round his neck—and hence the collar, the far-away expression, and the subsequent autograph. One glance at his socks sufficed to show he was not Manton, and Winter is not yet here, this being only the 23rd of October, therefore he must be Osipenko."

"Your reasoning is faultless," said I, filled with admiration. "And who is that alighting from that small but desperate-looking car?"

"That," said Holmes promptly, "is the Editor of *THE AEROPLANE*."

"How do you know?" I asked.

"If you read *THE AEROPLANE*," replied he, "and, of course you do, you will have observed the fearless way in which its Editor speaks his mind. His leading articles are read wherever the English—or Irish—language is spoken. Slide-rule experts shake in their laboratories and Government departments tremble as his publishing day draws near. The man you point out stands 6 feet 3 inches, weighs 210 pounds 4 ounces, his footprints show he takes a number 12 boot, and he has a fighting look in his eye. He is the biggest man here, and therefore he, and he alone, must be the writer of those articles."

[Can one bring an action for libel against one's own paper?—Ed.]

From inquiries I made later, Holmes was right, as usual.

We watched the flying for some time. Mr. Manton and Mr. Osipenko were both busily engaged. Mr. Roche-Kelly flew a Beatty-Wright. Mr. Birchenough tested a de Havilland scout, and Mr. Barrs flew the Mann biplane. Suddenly I missed Holmes. He was on his hands and knees at one end of the enclosure in an excited state, and with the aid of a lens was examining a fragment of paper. It bore the almost illegible words, "Trombone part," and was stained with blood.

"Watson," said Holmes, "do you observe these depressions in the turf, arranged roughly in a circle? Take a note of this depression in particular. Here a big drum has rested. In fact, there are signs of depression all round, though not of a recent date. Watson! these bloodstains have solved at last the Mystery of the Speckled Band! It was killed after all!"

My mind went back to the many triumphs of Holmes—the Recovery of the Missing Cylinder, the Affair of the Pupil Who Paid Twice, and the Man with the Bundle of Papers under his Arm—but this latest of his successes pleased me more than any. I have often wondered what had become of That Band.

The mist turned into a slight rain, and the crowd melted away. A pilot flew aimlessly round, almost invisible in the deepening gloom, carrying a passenger who at frequent intervals waved his hand to a group who stood on the aerodrome. We waited to see the passenger, and as he returned to the limousine which was waiting patiently, we saw that he was a foreigner of distinction.

"French cavalry officer of high rank and several campaigns enjoying his *baptême de l'air*," said Holmes.

"You recognise the uniform, I presume?" I answered.

"Not exactly," he replied, "but his commanding physique, the graceful outward curve of his legs, the many military decorations, and the gold lace on his cap reveal beyond dispute his career in the cavalry. Then his extraordinary anxiety for a flight in such uncomfortable weather and failing light, and the boyish glee with which he waved to his friends, are conclusive evidence that he is quite without experience in aviation."

There was still one other visitor waiting in the rain, and I asked if he knew the officer.

"Yes, sir," he replied, "the gentleman comes from

Australia and has been flying for France for twelve months. He has already won the Legion of Honour and the War Cross for distinguished bravery in aerial reconnaissance. Having a few days' leave, he appears to be taking a 'busman's holiday.'

The gloom grew deeper. Holmes, without further comment, suggested it was time to start for Baker Street.

On Sunday afternoon, as tea was being served, Holmes suddenly broke a long silence.

"It has been a sad day for Hendon to-day," he said. "Not a single flight—not a single visitor."

"By what strange process of reasoning did you ascertain that?" I inquired, filled with surprise, as usual.

Holmes placed his violin and hypodermic syringe on the table and poured out a cup of tea.

"I happened to glance out of the window several times to-day," he answered. "It has been raining all the time."—D. W. T.

A LUMINOUS COMPASS-WATCH.

An ingeniously constructed wrist-watch, combined with a compass, both easily readable in the dark, is the latest novelty placed on the market by the General Aeronautical Company, Ltd., of 30, Regent Street, S.W.

The watch is of the average size, the hands and figures being luminous. Over the face, somewhat in the form of a hunter case, is the compass, also arranged for night work. The cardinal points are luminous, and also the half of the needle which points northward. The compass closes with a simple spring upon the watch face, so that either instrument is readily accessible.

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TELEGRAMS—ETCHES, WINTON.

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CONVERSATION IN THE AIR.

Owing to a printer's error, the address of the Mears Ear Phone Co. was given as 493, Regent Street, W., when in fact it should be 193. The number 493 does not exist in Regent Street.

It may be well to explain that the Mears Ear Phone Co. are the makers of the Aerophone invented by Mr. Hammer which makes conversation in the air possible even with unsilenced engines.

ON SERVICE.

Many members of the motor engineering profession quietly disappeared at the commencement of the war, and have since been lost track of by their clients and fellow-sportsmen in their new spheres of "tuning up" the men and machinery of His Majesty's Forces.

Among such were the partners in the firm known as Markham & Prance, consulting motor engineers, of Dudley House, Southampton Street, Strand, and of High Street, Southampton.

As was generally known, both the partners in this firm had long Service associations, and thus, as was only to be expected, when war broke out, they offered their energies to the naval and military authorities.

Engineer Lieut. Markham, R.N., M.I.Mech.E., M.I.A.E., who, in addition to his association with the firm, will be remembered in marine motoring circles as registrar of ratings, Marine Motor Association, and official handicapper to the British Motor Boat Club, became inspecting engineer in the Royal Naval Air Service, and was shortly promoted to Engineer Lieut. Commander, and is now actively pursuing his work in connection with aeroplane engines as chief inspecting engineer.

Mr. H. Waymouth Prance, A.M.I.A.E., A.I.E.E., will be familiar to all habitués of Brooklands track in his capacity of official measurer and inspecting engineer, whilst in addition to his work as a consulting engineer our readers will recall him as the designer of the original "streamline body" and the originator of other inventions.

Leaving engineering affairs for the time being only, this partner was soon promoted from captain to major, and is now serving in the East with his battalion, the 2/3 Batt. London Regiment (Royal Fusiliers).

Rumour has it that Major Waymouth Prance has not let his inventive faculties rest during the past twelve months, and that his latest invention is nothing so peaceable as a "streamline body," but of this one is unable to say more for the present.

Thus it is, then, that Messrs. Markham & Prance have dissolved their partnership and closed both their offices—at any rate, for the duration of the war—but it is to be hoped that when Peace breaks out their advice will again be available to their numerous friends and clients among motorists, land, marine, and aeronautical. In any case they will have learned quite a lot about how things should not be done, which will doubtless enable them to give highly valuable advice to their clients on how to economise their motoring expenditure, and this should be knowledge worth paying much for in the super-taxed years to come.

SCHOOL AND WEATHER REPORTS.

	Mon.	Tues.	Wee.	Thurs.	Fri.	Sat.	Sun.
London District	Fair	Fair	Dull	Rain &	Fair	Dull	Dull
	Gloomy	Gloomy	& Fine	Dull	Show'g	Rainy	Show'g
Lake District	Fair	Windy	Fine	Windy	Wet	Gale	Gale

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Cross, Moody, and Owens.

Circuits with Inst.: Prob. Flight Sub-Lieuts. Aplin, Davenport, Graham, Gammon, Man, and Sadler.

Certificates taken during week by Prob. Flight Sub-Lieuts. Davies, James, and Hackman.

Machines in use: Grahame-White biplanes.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Baker, Begg, Brown, Brynildsen, Campbell, Collier, Cowper, Cumming, Davison, Duffus, Fawcett, Fellows, Fox, Gayner, Hodgson, Hughes, L. F. Jones, Kirkwood, Lashmar, Mellings, Middleton, Nash, Nicholson, Owen, Patterson, Podmore, Sainter, Schollaert, Smith, Stagg, Symington, Thompson, Halford-Thompson, Willmetts, Whincup.



AT THE RUFFY-BAUMANN SCHOOL:—Top Row—Messrs. Cuthbertson, E. Baumann (instructor), F. Ruffy (instructor), and C. May, Capt. Fairbairn Crawford, Lieut. V. O. Rees, Mr. Liddell. Lower Row—Messrs. P. A. F. Belton, and Johnson, Lieut. McBeane, Messrs. Vernon, Sherwood, Bolton, and Harkness.

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DRAUGHTSMAN wanted for Aeroplane and Airship work. No person at present engaged on Government work need apply. Candidates should apply to nearest Labour Exchange, stating salary, age, and previous experience, and mentioning this paper and Box No. 717.

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Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, and Caudron tractor biplanes.

Exhibition flights were given on Saturday.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann, Clarence Winchester.

Pupils with Instructor: Messrs. Cole (26), Harkness (26), Vernon (24), de Grauw (26), Flanders (10), Coppens (30), Wood (16), Cuthbertson (12), Bolton (34), Lannoit (34), Tomson (34), McBeane (20).

Pupils doing straights or rolling alone: Messrs. Cole (12), de Grauw (46), Coppens (8), Stewart (54), Liddell (45), Griffiths (40), Baily (40), McBeane (54), Sherwood (38).

Pupils doing figures of eight or circuits alone: Capt. Fairbairn-Crawford, who recently passed his brevet tests at this school, has been flying a 50 Caudron type for practice.

Machines in use: Three Ruffy-Baumann (50 and 60-h.p.) tractor biplanes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, and C. M. Jacques.

Pupils: Messrs. Brain, Burgess, Heyn, Atkinson, Woods, Thorpe, Dawson, Lees, and Harding, rolling. Messrs. Lewis, Lockett, Iowett, Law, Little, and W. Warren, jun., straights.

Figures of eight or circuits alone: Messrs. Northrop and Little. Mr. J. E. Northrop took his certificate during the week, making a good steady figure and landing on the mark.

Machines in use: Four tractor biplanes.

AT THE HALL SCHOOL.

The following pupils received instruction:—
With Mr. H. F. Stevens: Messrs. Homer, Bangs, Broad. All doing circuits, figures of eight and glides.

With Mr. C. M. Hill: Messrs. Cook, Hall, Nicolle, Butterworth, Drew, Wilkins, Punnett, Seward, Stirling, Dodd. All doing circuits or half circuits and landings.

With Mr. Charles Bell: Messrs. Bond, Dresser, Wooley, Shum, Lieut. Bell, Evans, Manly, Cumberbirch, Rattray, Redford, Mann, Lake, Smith, Ormerod.

Mr. Hamer took his certificate during the week. Mr. B. Watson, who qualified at the Hall School a week ago, has now been engaged by the Sopwith Aviation Co., Ltd., to put new machines through their tests.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Messrs. Francke, Gammon, Jones, Howe, and McConnell.

Doing straights alone: Mr. Fraser and Mr. Horridge.

Circuits with Inst.: Mr. Hughes.

Machines in use: Grahame-White biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding, J. Lankester Parker, and W. Laidler.

Pupils at work with Instructor on machine: Lieut. Manning (22), Ruthven (14), Coats (41), Ingham (20), Lieut. Stubbs (16), Inglis (12), Jeffreys (9).

With Inst. as passenger: Messrs. Shaw (14), Robinson (18), Robertson (11).

Machines in use: N.A.C. 80 Gnome biplane.

The weather has been bad during the week, and even when fair, has been poor for tuition.

On Tuesday Mr. Coats was up with Mr. J. Lankester Parker, making bomb-dropping tests. From 1,500 feet they were able to get within two feet of a six-foot mark, several other shots being exceedingly close.

For a long time the possibility of flying overland and landing in another lake has been considered feasible, but it was not until Wednesday that the same two aviators brought such a flight within the region of practical politics. They landed on Esthwaite Water, and returned successfully at over 2,000 feet. After leaving Esthwaite Water the engine showed signs of misbehaviour, and Mr. Parker had to turn back and attempt another landing, but luckily the engine picked up, and he was able to bring his task to a successful issue.

On Friday, at eleven o'clock at night, there being a moon, and the wind seemingly having dropped, Mr. Parker went out with a pupil with the intention of carrying out tuition, but the wind proved to be very strong over 50 feet, and it was not possible to give more than one lesson.

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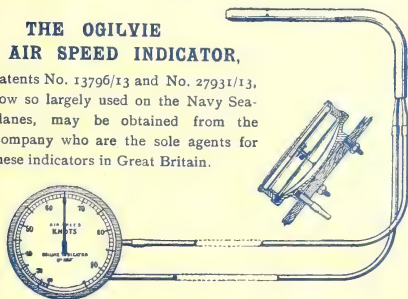
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WEDNESDAY, NOVEMBER 3, 1915

Saturday Extra

Vol. IX. No. 18

ONE PENNY WEEKLY

[Registered at the G.P.O.,
as a Newspaper.]

KANNONEN-FUTTER



The picture shows a Zeppelin over the German City of ——— [name deleted, not by Censor but by editorial unfamiliarity of German topography]. At such a height the ship looks appetising cannon-fodder. One hopes that the next raid on England will provide the Anti-Aircraft Corps with the prey for which they hunger.

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ON MANNING AN AIR FLEET.

Just about the present moment, whether the people most responsible know it or not, the High Authorities who govern the destinies of the Royal Naval Air Service and of the Royal Flying Corps have the chance of a century, for on their acts in the immediate future depend not only the success of our aircraft in the present war, but the whole future of the British Flying Services. If the said Authorities act wisely, then the Flying Services will go on and prosper, but if they once get started on the wrong lines, it will be necessary at some future date to pull the whole machinery of the Services to pieces and start afresh. If mistakes are made now, it will serve us right if that pulling to pieces has to be done in the middle of the next great war—just as we shall be compelled to pull all our political and a great deal of our military machinery to pieces during the next few months if we are to win this war.

Any man who has ever been to a decent school knows how important a part "tone" plays in the success of a school, both academically and socially, and how the tone of a man's school sticks to him throughout his life. How a school acquires its own particular tone is difficult to comprehend. Primarily, it depends on the house and form masters, on their methods of handling the senior boys, their choice of prefects, and so forth. A bad headmaster cannot spoil the tone of a school for years, unless he is so bad that all the other masters resign and are replaced by stiff or cranks of the new Head's choosing. Even then, the school traditions, handed down from senior boys to juniors, and from the juniors as they become seniors to the new generation of small kids, will maintain the tone of a school for years. It is not till a bad Head begins to let in boys of an entirely undesirable or socially impossible class, who are mentally and morally incapable of acquiring the proper tone, that the school really begins to fall to pieces. Even an influx of ill-bred youngsters who have been pushed into a first-class school by sheer weight of their parents' wealth cannot spoil a school if the masters are of the right class, because if the individual youth is malleable he takes on the polish of his surroundings, and if he is quite impossible he is thrown out early in his career either by his house master or by an adverse consensus of opinion among the boys themselves. One knows of plenty of such instances in our two or three most famous public schools.

Nevertheless, continual feeding with boys of the wrong class—I meant filling up vacancies in the school when I wrote that, but it applies equally well if taken literally to mean eating in company—will spoil the tone of the best school; or, anyhow, will earn it a bad name, owing to the men turned out therefrom acquiring merely a superficial polish and behaving in later years in the deeper things of life as the cads they are by nature. People of this sort ruin the name of their school after they have left—because they are the very people who brag about having been to it—and they do it harm while they are there, for, as many old proverbs tell us, "evil communications corrupt good manners," "thou canst not touch pitch and not be defiled," and so forth, and the weaker characters among the better-bred boys

pick up evil ways, morally and socially, from their inferiors.

THE VALUE OF TONE.

First and last, and all the time, the tone of a school—which means also the success of a school, considered either as a financial investment for the founders, or as a factory for the production of men who will do their country's work in the best and most honourable way—depends on the ability of the Head, or of the Governors, or of whoever has the deciding of such matters; first of all, to select masters possessing the right tone, and, secondly, to see that no boy is admitted to the school who is not of a type calculated to be a credit to the school in after life.

In a precisely similar way the value to the country of a ship's crew, or a regiment, or special service or corps, depends on its efficiency. Its efficiency depends on its tone, and its tone depends on its senior officers and on those who have the selection of its junior officers. In a good school there may be a particularly rank house or form, and the master responsible for its rankness has to go sooner or later if the reputation of the school is to stand. Similarly, there may be a bad company or squadron in a regiment, and it will remain bad till the senior officer is changed. These are only excrescences on a healthy body and can be doctored. But the general health of a body, or a school, or a regiment, or a Service, depends on the soundness of the Head, and of the chief members.—Incidentally, that is why the House of Commons is in such a debilitated state.

THE TONE OF THE FLYING SERVICES.

Now, in just the way indicated, the whole future of the Flying Services depends on the tone which is given to them at this moment. Hitherto, they have been too small and unformed to have acquired any very distinct tone.

One might liken each of them at present to a child of about four years of age, and growing rapidly, if one wishes to form some mental image of what they will be like when full-grown. They are unceasingly active, they are very much "en evidence," they make a good deal of noise, they are an infernal nuisance to elderly gentlemen and old women of both Services, and one can form already some idea of their general character. Even at the age of four a child shows distinct signs of its upbringing, but its character is still unformed, and may be made or marred by those who have to bring it up.

So far, the R.F.C. is by far the nicer child. It is better behaved, it has prettier manners, it is less noisy; in fact, it is—to use a horribly suburban word—more genteel. Its chief danger, as I see it, is that it may become ultra-refined. If it were to be built up in future entirely of *pukka* soldiers, there would be no such danger; but there are so few real soldiers left, and so many queer people are getting into the R.F.C., that there is a danger of their trying to live up to the Corps' advertised reputation as "the corps d'élite" of the Army, and so may acquire the gentility and refinement of the shop-

walker, than which nothing could be more offensive. I have seen symptoms of this in individuals already.

The R.N.A.S., on the other hand, is rather an *enfant terrible*. Judged by any strictly Service standard, it is not a nice child. It is healthy and robust, and shows every sign of being immensely strong when it grows up, but it has not been in the hands of a good nurse in its babyhood. It makes too much row for its size, it does not do as it is told, and it is generally an undisciplined little ruffian. In fact, to sum it up shortly, it doesn't wipe its nose prettily. If the Service were to be built up in future entirely of *pukka* sailors, there would be no danger of its developing into a crowd of longshore pirates, for the correct Service tone would soon shake the kinks out of it, but there is a danger of the queer people who are getting into the Service—invariably known on joining as "quirks," till they have proved themselves otherwise—endeavouring to ape the "bluff and hearty sailorman," while, at the same time, posing as "heroes of the air," and expecting everyone to bow down and worship accordingly. The result is the most insufferable type of small boulder imaginable.

THE FALLACY OF THE OFFICER AVIATOR.

The root of all these troubles is the idea which seems to obsess both Services that to be an aeroplane pilot a man must be an officer. I said as much years ago, and repeated it months ago, and I say it again now, still more emphatically, after watching very closely the results of over a year of war.

As the result of this idea commissions are being given to young men of an entirely wrong type. There is, in fact, no need to give commissions to men who are not of the proper Service caste and tone, either in the Flying Services, or in any other; but, apparently, those left behind at the Admiralty and War Office either do not know where to look for gentlemen, or do not recognise them when they meet them.

I cannot imagine the officers who formerly sat on the Selection Board of the R.N.A.S. passing more than about two per cent. of the quirks who have been made "prob. flight sub-lieuts." in the past eight months or so. Unfortunately, those officers are now either commanding seaplane carriers or air stations, and their priceless experience in selection is not available. Possibly recent changes at Whitehall may improve matters, so far as mere selection is concerned; but if quantity of officers is still required by the High Authorities rather than quality, there will not apparently be much option for the selecting officers, so long as the present "Waiting List" system remains.

THE WAITING LIST EVIL.

The "Waiting List" evil applies to both Services, and, therefore, I may as well deal with it here and now. The way it operates is this. A candidate for the R.N.A.S. or R.F.C. applies at the Admiralty or War Office, as the case may be. He is given a form to fill up with all sorts of particulars about himself. He has to get a certificate of good character. And he has to pass the doctor. Then he is put on the Waiting List and is told to wait.

No one can give him any idea of how long he will have to wait. The officer who interviews him may tell him that he certainly will not be called up for a fortnight or three weeks, but he cannot promise him that he will be called up within three months. Then the applicant goes home and waits. After a month of being worried by friends and recruiting people as to why he is not in khaki he probably enlists, or gets a commission in the Line, and in that case the Flying Services probably lose a good man. If he has a little money, perhaps he goes to a civilian school to learn to fly and thus overtake in a measure the time spent in waiting.

THE SCHOOL QUESTION.

Unfortunately, the R.F.C. does not seem to care about men from civilian schools. One applicant for an R.F.C. commission was, I know, recently warned not to go to a civilian school. Some of the people in fairly high places have an idea that a man acquires bad habits at civilian schools, and they prefer to take temporary gentlemen from Kitchener battalions and train them at R.F.C. flying schools, the idea being that a man's time is better spent while on the Waiting List in learning to be a soldier than in learning to be an aviator. This is a very debatable point, for if a man turns out to have the makings of a thoroughly good officer his regimental C.O. is not in the least likely to consent to his transferring to the R.F.C. after he has spent six months knocking the corners off him. On the other hand, if a man is keen enough to spend his own money—often his hard earned savings—on learning to fly, it stands to reason that he is in deadly earnest about it, and even if Nature has so built him that he cannot hope to become a good flier, he may, at any rate, have the makings of a useful equipment officer, if nothing else.

These officers who dislike civilian schools so thoroughly seem to forget that most of the best R.F.C. pilots were trained at civilian schools, those of them who were soldiers to begin with did not lose caste thereby, several mere civilian instructors have won high distinction on active service, and but for civilian schools there would hardly be any R.F.C. I am in doubt as to whether their dislike of civilian schools is pure snobbishness—in which case their Kitchener cubs are not likely to be much social consolation to them—or whether the War Office is up against civilian schools simply and solely because the Admiralty has supported them. That, at any rate, would be an understandable reason.

It cannot be that the R.F.C. thinks it can run a school better than a business firm can, for no military school which teaches elementary flying has ever been as well run as the old Bristol and Vickers schools were run at Brooklands and on Salisbury Plain. And the things done by the R.F.C. school mechanics would, in Mr. Kipling's words, "make a tinker ill." True, some military schools have turned out an astonishing number of pilots—of a sort—but their cost in wrecked machines and engines has, in many cases, been out of all proportion to their value. Here and there one finds officers running military schools thoroughly well—I am talking of elementary schools and not of establishments such as the Central Flying School, which teach purely military flying after men have taken their "tickets"—but even then one finds that they themselves have been trained at civilian schools, and frequently the instructors at these schools are merely civilian instructors in uniform.

I am strongly of the opinion that if the War Office had encouraged civilian schools at the beginning of the war, instead of closing them down as it did, the R.F.C. would have had more pilots than it has at present, and, very possibly, better pilots. Naturally, the schools would have been improved by being put under a certain amount of military control, and pupils would have been the better for some military instruction when not flying, but, all the same, the civilian school is not a thing to be despised as it seems to be by some people in the R.F.C.

The Admiralty, on the other hand, has supported civilian schools by keeping them well supplied with pupils, but it has not exercised sufficient control over them, and it has not insisted on pupils putting in their spare time at learning something about their profession.

In fact, I know of one school the proprietor of which spent some two months in convincing the Admiralty that it would be a good thing if a retired Naval Officer residing in the neighbourhood were allowed to teach his pupils

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something about navigation and naval routine, and if an ex-sergeant of Marines were allowed to teach them something of drill and discipline. Having convinced them of this, and having turned out half-a-dozen of the best pilots in the Navy, he himself was taken over by the High Authorities and made into an ordinary flying officer, and so the Admiralty deprived itself of a most valuable source of supply for new pilots.

Looking at things all round, I am inclined to the belief that the Admiralty always does the right thing in the wrong way, and the War Office always does things the right way but does the wrong thing.

HOW THE WAITING LIST WORKS.

However, to return to the Waiting List question. Whether a man goes to a civilian school, or merely loaf, he waits and waits and waits, and unless some thing startling happens he goes on waiting. No one ever tells him straight out that he is not wanted. That would not be polite, and so quite a lot of men who would be useful in jobs other than flying waste their time.

If a man is lucky he may get into one of the Services quickly by a fluke. For instance, suppose there is a Waiting List of 500 for one of the Flying Services—there may be 50, or it may be 5,000, for all I know—and this man is 501. Immediately afterwards, the Department concerned decides to call up the first 100 on the List. Perhaps 90 have got fed up with waiting, and have gone and done something else. Another 100 are called up. Perhaps 30 have gone off, and 60 show in a week that they will never be able to fly. Another 100 are called up. Perhaps 20 show promise. Another 100 are called up, and 30 are worth keeping. Yet, another 100 are called, and, perhaps, at the end of a month about 70 reasonably promising pupils are found. So No. 501 is called up with the sixth 100, and gets in quickly. On the other hand, there may happen to be a lot of people with influence who manage to get themselves, or their sons, or brothers, pushed forward on the Waiting List. These people may be slow learning, and yet too influential to be pushed out of the Schools, so there they stop, blocking the progress of those behind them, damaging machines, and generally being a nuis-

ance. More men on the Waiting List get fed up and join something else, and are lost to aviation.

Then, suddenly, the slow batch are removed, either they scrape through somehow and are given billets on the ground, or they are cleared out. Possibly there is, at the same time, a sudden influx of machines from new makers. Then the Department concerned rushes about and rakes in the Waiting List hundreds at a time, exhausts it, and starts taking in all kinds of undesirables and giving them commissions, to the detriment of the Service.

WHY "OFFICERS ONLY"?

Now, I beg to submit, with all due respect—possibly with more respect than is due, considering the way things are muddled at Headquarters—that it is quite time the idea that flying is a job for "officers only" was squashed.

So far as the old Army was concerned the idea had some sense in it, though, even so, the ratings and ranks were never given a fair chance to prove their value as pilots. The fatal mistake was made—as I pointed out years ago—of trying to train Warrant Officers, N.C.O.'s, and men of unimpeachable good character to fly. Frequently, these men were too old, and almost invariably they were of the wrong type. The man who has never committed a "crime"—in the Service sense—is certainly not of the adventurous type who makes a pilot. Furthermore, the soldiers who were taught to fly were all infantrymen.

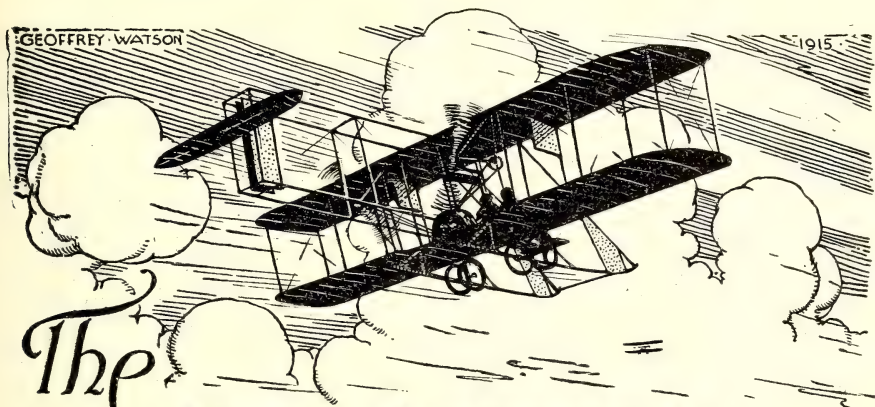
Now, the average officer is a horseman, even if professionally he is a mud-crusher. If he is not a horseman, he does, at any rate, drive a fast car, or a motor-bicycle. Therefore he, especially the horseman, starts with an immense advantage over the man who has never done any of these things. Apparently, it never struck anyone to try the experiment of teaching cavalrymen to fly. And so the idea grew that only officers make aviators. From that idea grew the still more foolish and much more harmful convention that if he is an aviator a man must be made an officer or cease to be an aviator.

THE PRESENT NEED.

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when that convention grew. To-day we want first-class pilots, no matter what their social class. Therefore I claim it is better that officers should be officers on account of their ability to command, whether they can fly or not, and that pilots should be pilots whether they wear a Sam Brown or a bit of webbing.

The majority of the French pilots are either "sapeurs," "sergeants" or, at most, "sous-officiers." Comparatively few are commissioned officers, and those who are seldom fly as well as the pilots they command.

Our system of giving commissioned rank to socially impossible people, simply so that they may fly, tends to lower the tone of both Flying Services. In the Navy the R.N.A.S. is regarded as altogether unseemly, and what is left of the old Army does not regard the R.F.C. officer as by any means of the élite on the ground, much as it admires the R.F.C. in the air. And when the latest-joined of both Services meet the older people the position will not be improved.

There is, however, no reason why we should not have an unlimited supply of highly capable pilots if we go to work the right way. And remember particularly that for every hundred pilots we possess to-day we must have a thousand in a few years' time, or go under in the next war, when the Fleet can no longer guard these islands from assault.

N.C.O. PILOTS.

First of all, let us make up our minds that the greater number of our pilots will not be commissioned officers. We can have our corporal aviators, or sergeant-aviators, or warrant-aviators as well as any other country.

There must be already some dozens, if not hundreds, of pilots hanging around on the Waiting List because no one will tell them that they are socially unsuited to be commissioned officers. Of course, it seems almost impossible when one sees some of the specimens now holding commissions; but still, it is a fact. And if things are done properly now, there will be no more doubtful commissions given. All these pilots should be raked in and given warrant rank in whichever Service they may choose.

One who knows the civilian schools better than I do tells me that 50 per cent. of the pupils are perhaps suitable to become commissioned aviators, and the rest are not. He writes:—"The remaining 50 per cent. are men mostly of the mechanic class, thundering good chaps in every way, who will probably make excellent pilots. Now, every one of these poor fellows is, to himself, absolutely certain that he will get a commission without difficulty in the R.N.A.S. or R.F.C., and tells you with great glee that he has splendid recommendations from the local Vicar, or some Colonel (T.F.) with whom, in peace time, he deals, or works for. These chaps go to the War Office and see Major—. It is pathetic to hear from them on their return that Major— has told them there are no vacancies at the moment, but to apply again, or he will let them know, and to report when their tickets have been taken. They thus live on hopes, which is a shame, as we in the know are aware that their chance is nil, or very slight. Wouldn't it be far better for Major—, for he could size up a man as soon as he saw him, to tell the man that he regretted being unable to put his name down for a commission, but that he would be pleased to recommend him for the rank of, say, Flight-Sergeant, on his passing an approved test at Farnborough? This should make him senior to the non-pilot mechanics R.F.C. and at once give him a certain status.

"Many of these poor men pay all their savings in fees to the schools, and live a hand-to-mouth existence in rooms during the time they are learning, and it must be galling for them to see others getting pushed first and

obtaining direct commissions. I have spoken to men who have come back from the War Office after getting tickets and being turned down. No commissions offered them, nor any compromise in the way I suggest. These men won't go into the ranks of the R.F.C., for they won't care to drive Service cars, clean buttons for officers, or do aeroplane garage work. Therefore, very useful aviators are lost to the country, and, goodness knows, we want all we can train.

"It would be far better to advise them straight out to take this middle rank, and hold out the promise that if they are good pilots and do meritorious work, they will get every chance of being promoted to commissioned rank."

A CASE IN POINT.

The same person writing later on the same subject, says:—"One man, after vainly trying for a commission in either Service, was persuaded to enlist in the ——. This fellow took an excellent ticket, and was very keen. Would you believe it, he has been on sentry duty at ——— ever since—ten weeks ago? I don't think he has ever been in a machine, or so much as touched one ever since. Now, is this much inducement for any one of the men I mentioned to join as a ranker? He would not get his £75 back either.

"I call it a scandalous shame. A man with a ticket should have some precedence over the common or garden A.M., R.F.C., and if not allowed to pilot himself should be allowed to do useful work.

"The rumour has now spread at Hendon that civilians are no longer eligible for the R.F.C.—ticket or otherwise—but can only get in if they first get a commission in some regiment and then transfer. I think something definite from the War Office should be made known, so that all those now learning may know how they stand."

THE COMMON-SENSE PLAN.

With this letter I entirely agree. Both Services are simply throwing away fine material for pilots. Far better material than the stuff that is wasting time and smashing machines as officers on probation at the Government schools. The man who risks his own £75 or £100 is keen. He wants to fly, and he should be used to the best advantage.

It is hard to believe that he can be socially inferior to some of the people who have got direct commissions; but admitting that he is, give him non-commissioned rank, give him a chance to show that he is a pilot, and if he passes his tests, give him his £75 back, for he is cheap at the price, considering what the Government-trained pilot frequently costs in smashes—and in pay while he is learning.

We need a regular grade of N.C.O.-aviator, and there will be no difficulty in getting such men in thousands if once we can get away from the present convention that a pilot must hold commissioned rank.

Do the Hendon trick-fliers fly any better since they were given commissions? Did they fly any worse as sergeants than do some of the recently appointed squadron commanders? Which would any officer rather go up with as passenger?

SOURCES OF SUPPLY.

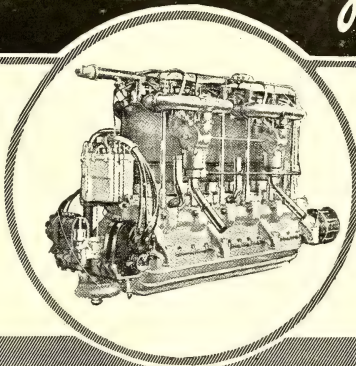
As I have said, there are dozens of men who have tickets and would engage as N.C.O.-aviators. There are thousands of cavalymen who are doing nothing who could be trained to fly thoroughly well, if selected for their faces and not for their regimental records. There are thousands of Australians—for Australia has already sent us some of our very finest fliers, thanks to the Australians being a horse-riding race.

Curiously enough, we seem to have gone to some trouble to get aviators from Canada, but not from Aus-

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trial. Canada hardly gave us one pilot before the war—I can recollect none—and though a few Canadians since have turned out splendidly, the majority of those sent over officially are much more entitled to be N.C.O.s. than commissioned officers. Anyhow, Canadians are not horsemen of the Australian type, so one would have expected an intelligent War Office to have tapped Australia first, and South Africa also, seeing what fine pilots those countries have sent us.

Possibly they were neglected because the officer who had to go abroad to settle such matters liked the upholstery in the state-rooms on the Canadian boats better

than that on the Australian and Cape liners. That is the kind of reason that generally settles such questions in England.

Anyhow—we need thousands of pilots for our air fleets of the future. They cannot all be commissioned officers. We can get thousands of men of the N.C.O. class who will make better pilots than the youths who now pass for officers. Will the Admiralty and War Office make proper provision for the employment of such men as are available, or do they want them all to be absorbed into the Army and be pushed into the trenches where cheaper men would do equally well?—C. G. G.

THE ROYAL NAVAL AIR SERVICE COMFORTS FUND.

Mrs. Sueter, the organiser of the above Fund, is now busy sending consignments of warm clothing and other comforts and little luxuries to the different detachments of the Royal Naval Air Service both at home and abroad, and it is hoped that support from readers of this paper will enable her to continue her good work.

Extracts from a letter from Flight Commander A. Nickerson, R.N., to Mrs. Sueter give some idea of how the work of the Fund for the men of the R.N.A.S. is appreciated by their officers. He says: "On behalf of my flight please accept our best thanks for the gramophone and records, and for the two most useful parcels of warm clothing, cigarettes and sweets. I have just issued the clothing; the hands are delighted—everyone trying on something. . . ."

Mrs. Samson and Mrs. Thompson have kindly sent a further large consignment of garments direct to the Dardanelles. Mrs. Sueter has also sent a consignment of garments to Nos. 2 and 4 Kite Balloon Sections serving with the B.E.F. in France, 546 garments in all being despatched.

There is great need for khaki garments because the men of the R.N.A.S. in the Mediterranean wear khaki, not blue.

The following cash contributions have been received during the past week:—Mrs. Sueter, £10; Mrs. Louis Millar, collection at Foxrock, £7; Miss Burd, 10s. Total for week, £17 10s. Grand total to date, £14,230 1s. 1d.

Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

FOR PRISONERS IN GERMANY.

Muriel Countess Helmsley and Mrs. Rowton beg to acknowledge with thanks two further sums, namely, from the employees of Vickers Ltd. (Weybridge Works), £5 3s., and from the employees of Vickers Ltd. (Bexley Heath), £2 9s. 6d., towards their fund for prisoners of war in Germany.

Further contributions should be sent to 21, Upper Berkeley Street, W.

TO SUBSCRIBERS IN NEUTRAL COUNTRIES.

The Secretary of the War Office issued through the Press Bureau on October 26th the following official statement:—

The public are informed that on and after Saturday, November 6th, newspapers, magazines, books, and other printed publications (other than trade circulars) will not be sent forward to neutral European countries unless posted direct from the office of publishers or newsgents who have obtained permission from the War Office for this purpose.

Persons desiring to send newspapers, etc., to neutral European countries should therefore give their orders for execution to publishers or newsgents who have obtained such permission.

Publishers and newsgents desirous of obtaining permission to send newspapers, etc., to places on the Continent should communicate with the War Office, stating whether they have existing orders for the dispatch of newspapers, etc., to the neutral countries, and the average quantity which they export weekly under these orders.

No information can be given as to the disposal of packets stopped under these regulations.

[If those who have hitherto received *THE AEROPLANE* regularly in neutral countries, particularly America and Scandinavia, find that future copies do not arrive, will they please communicate at once with the Editor, *THE AEROPLANE*, 166, Piccadilly, W?—Ed.]

BY ERROR.

The attention of the Editor of *THE AEROPLANE* has been drawn to a regrettable error which occurred in the issue of August 18th, in that the Military Notes of that date contained an excerpt from an article describing an action between a British and a German aeroplane, the original of which was by some curious error in transcription attributed to the "Daily Chronicle," when in fact the article actually appeared in the "Daily Mail."

It is always the custom in *THE AEROPLANE*, whenever an article or even a paragraph of any importance is quoted from another paper to give that paper full credit, and it was the intention to do so in this case but for the error mentioned.

The Editor therefore offers his apologies to the "Daily Mail" for having failed to acknowledge that paper as the source of this particular article, and much regrets that such a mistake should have been made.

RHODESIA.

The British South Africa Company has received a cable message from the Administrator of Southern Rhodesia requesting it to place at the disposal of the Secretary of State for War the sum of £1,500, deposited with the Treasury at Salisbury, for the purchase of an aeroplane as a gift to the Royal Flying Corps by the inhabitants of Gatooma, Southern Rhodesia, who ask that the aeroplane may be named "Gatooma."

The aeroplanes previously presented to the Imperial Government by the inhabitants of Southern Rhodesia are named respectively "Rhodesia No. 1" and "Rhodesia No. 2."

A NEW COMPANY.

The file of the following new company is now available for inspection at Somerset House:—

MACFIE and CO. (Ltd.), AEROPLANE FITTINGS MANUFACTURERS.—Oct. 26th. £5,000 in 1,000 Deferred shares of 1s., and 4,950 Ten per Cent. Participating Preferred shares of £1. Hampden House, Kingsway, W.C.

CONCERNING PHOTOGRAPHS.

It should be noted that the various photographs of pilots and of school groups which have appeared in *THE AEROPLANE* during the last few weeks have been taken by Mr. F. N. Birkett, 97, Percy Road, Shepherd's Bush, from whom copies may be obtained at reasonable prices by those interested. Mr. Birkett's series of "Pilot Portraits" is the most complete in existence.

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Naval and Military Aeronautics.

From the "London Gazette," October 26th, 1915.

ADMIRALTY, October 23rd.

ROYAL NAVAL AIR SERVICE.—Probationary Flight Sub-Lieuts. confirmed in rank of Flight Sub-Lieut. for continuous service :—H. C. Vereker (April 16th); R. Young, N. Gregory (May 2nd); G. Shanks (May 24th); J. E. Morgan (May 31st); H. G. R. Malet (June 12th). B. C. Clayton, R. Douglas (June 14th); H. McClelland (June 26th).

Probationary Flight Sub-Lieuts. confirmed in the rank of Flight Sub-Lieut. for temp. service :—B. P. H. de Roeper (April 16th); R. S. Dallas (June 25th); L. A. T. Pritchard (June 26th); D. G. Broad (July 9th); S. J. Goble (July 13th); H. Sherwood (July 14th); F. U. Y. Weldon (July 17th); C. A. Rea (July 21st); A. J. Whetnall (July 24th); J. A. Carr, F. E. Sandford (July 26th); R. D. Delamere, A. J. Nightingale, A. T. N. Cowley (July 30th); N. Keeble (August 2nd); G. V. Leather (August 14th).

* * *

WAR OFFICE, October 26th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—Sec. Lt. H. R. D. Simpson, 6th (Inniskilling) Drms., and to be sec'd.; Temp. Sec. Lt. A. L. Burnie, E. Kent, R., and to be transferred to Gen. List; Sec. Lt. G. G. Hubbard, S.R.; Sec. Lt. P. E. L. Gethin, S.R. (August 28th).

The initials of Temp. Sec. Lt. C. E. Foggin, Gen. List, are as now described, and not as stated in "Gazette" of October 22nd.

BALLOON OFFICERS.—Lt. E. J. E. Hawkins, I.A. Res. of Off.; Lt. the Hon. H. Lygon, Suffolk Yeos., T.F.; Temp. Lt. F. H. Cleaver; Lt. S. C. Raffles, R. W. Fus., S.R., and to be sec'd.; Temp. Sec. Lt. G. C. H. Dorman, R.E.; Sec. Lt. G. O. Hayne, S.R.; Sec. Lt. G. S. Sansom, S.R. (Sept. 5th); Sec. Lt. W. H. Furlonger, S.R. (Sept. 6); Temp. Sec. Lt. J. A. G. Swaine, R.A., and to be transferred to Gen. List (September 9th, but with seniority as from July 3rd); Temp. Sec. Lt. W. S. de Ropp, Wilts R., and to be transferred to Gen. List (September 14th); Capt. F. H. Shaw, A.S.C., T.F. (September 17th); Sec. Lt. B. H. Radford, S.R. (September 20th).

Apts. of Sec. Lts. E. B. Broughton and L. E. Brown-Greaves, S.R., notified in "Gazette" of September 28th, are ante-dated to September 14th and September 5th, respectively.

Sgt.-Maj. G. Laing to be QUINT., with hon. rank of Lt. (September 21st).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—C. L. Willcox to be Sec. Lt. (on prob.) (September 20th).

* * *

From the "London Gazette" Supplement, October 27th, 1915.

WAR OFFICE, October 27th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. W. Butterworth confirmed in rank.

* * *

From the "London Gazette" Supplement, October 28th, 1915.

WAR OFFICE, October 28th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank : V. D. Bell, A. B. Adams, B. J. Moore.

* * *

From the "London Gazette," October 29th, 1915

WAR OFFICE, October 29th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Coms.—Temp. Sec. Lieut. M. K. Cooper-King, Gen. List, and to be temp. capt. whilst so employed. September 29th. Temp. Capt. P. Babington, Hants, T.F. October

2nd. October 14th : Capt. F. G. Small, Conn. Rang.; Capt. J. R. Howett, S.R.; and to be temp. capt. whilst so employed. October 14th : Lieut. E. M. Murray, Q.V.O. Corps of Guides (F.F.) (Lumsden's), I.A.; Lieut. C. W. Anstey, S. Wales Bord.; Lieut. F. E. Hellyer, Hants, T.F.; Lieut. D. R. Hanlon, R.A.; Lieut. C. M. Crowe, S.R.; Lieut. G. C. N. Nicholson, S.R.; Lieut. S. T. Sanderson, N. Irish H., S.R.; Lieut. H. L. Cooper, S.R.; Lieut. F. H. Jenkins, S.R.; Lieut. H. R. Nicholl, S.R.; Sec. Lieut. L. A. Pattinson, R.F.; Sec. Lieut. J. O. Cooper, S.R.; Sec. Lieut. E. H. Mitchell, R.A.

Flying Officers.—Lieut. C. H. Awcock, R.A., and seconded. September 23rd. October 7th : Lieut. L. H. Sweet, Hants, and seconded. Sec. Lieut. W. A. Summers, 18th Hrs., and seconded; Sec. Lieut. F. W. Stent, S.R., Temp. Sec. Lieut. W. R. E. Harrison, E. Kent, and transfd. to Gen. List; Sec. Lieut. G. de L. Wooldridge, S.R. Lieut. J. H. Simpson, 5th Can. Inf. Batt. October 12th. October 16th : Sec. Lieut. E. M. Pollard, W. Yorks, T.F.; Sec. Lieut. V. D. Bell, S.R.; Sec. Lieut. A. B. Adams, S.R.; Sec. Lieut. B. L. Moore, S.R.

MEMORANDA.—J. R. Herbert to be temp. sec. lieut. for employment with Royal Flying Corps, Military Wing. October 19th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank : F. W. Stent, G. de L. Wooldridge.

To be sec. lieuts. (on prob.) : S. J. Sibley. September 4th. C. S. Ross. September 10th. D. Cox. October 3rd.

* * *

The "London Gazette" of October 29th contains a long list of rewards for distinguished service in the field.

The R.F.C. honours are reproduced below :—

His Majesty the King has been graciously pleased to confer the undermentioned rewards for distinguished service in the field in Mesopotamia :—

TO BE MAJORS BY BREVET.

CAPTAIN (TEMPORARY MAJOR) H. L. REILLY, 82nd Punjabis and Royal Flying Corps.

CAPTAIN A. J. ROSS, Royal Engineers, attached Royal Flying Corps.

AWARDED THE MILITARY CROSS.

Lieutenant (temporary Captain) GILBERT BRAITHWAITE RICKARDS, Royal Flying Corps, Special Reserve.

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned officers in recognition of their gallantry and devotion to duty in the field :

Captain LIONEL WILMOT BRABAZON REES, Royal Artillery and Royal Flying Corps.

For conspicuous gallantry and skill on several occasions, notably the following : On September 21st, 1915, when flying a machine with one machine-gun, accompanied by Flight-Sergeant Hargreaves, he sighted a large German biplane with two machine-guns, 2,000 feet below him. He spiralled down and dived at the enemy, who, having the faster machine, manoeuvred to get him broadside on and then opened heavy fire. In spite of this, Captain Rees pressed his attack and apparently succeeded in hitting the enemy's engine, for the machine made a quick turn, glided some distance, and finally fell just inside the German lines near Herbecourt.

On July 28th he attacked and drove down a hostile monoplane, in spite of the fact that the main spar of his machine had been shot through and the rear spar shattered.

On August 31st, accompanied by Flight-Sergeant Hargreaves, he fought a German machine more powerful than his own for three-quarters of an hour, then

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returned for more ammunition and went out to the attack again, finally bringing the enemy's machine down, apparently wrecked.

Temporary Second Lieutenant HENRY BAYLEY REGINALD GREY-EDWARDS, Royal Artillery and Royal Flying Corps.

For conspicuous gallantry and skill on September 25th, 1915, on the Phalempin-Seclin line, when he bombed a train and damaged the track from a height of 400 feet under heavy rifle fire.

He was attacked by an enemy aeroplane, but drove it off. He also brought back a very useful reconnaissance report. This was all carried out under bad weather conditions.

Second Lieutenant SELDEN HERBERT LONG, the Durham Light Infantry and Royal Flying Corps.

For conspicuous gallantry on several occasions, notably the following:—

On September 10th, 1915, he went out to attack an observation balloon shed with a 100-lb. bomb, but, being heavily fired at by an anti-aircraft battery, he silenced the guns with this bomb and returned for another one, with which he attacked the balloon. He only narrowly missed it as it was being deflated beside the shed.

On September 23rd he made two determined attacks on trains from 500 feet, breaking the rails in two places. On the first occasion he returned to the attack three times, and finally climbed to 1,000 feet in order to make better use of his bomb sight; on the second occasion he made most of his return journey at 1,000 feet in order better to examine villages, roads, etc.

On September 25th he attacked a train at 500 feet under heavy rifle-fire and damaged the line.

Late in the afternoon of September 25th he heard that trains were moving at 25 miles distance, and, in spite of darkness and bad weather, he volunteered to attack them. Heavy rain prevented his reaching them, so he turned to attack Peronne Station, descending to 500 feet and coming under heavy anti-aircraft gun fire. This fire prevented his reaching the station, but he climbed to 1,500 feet and attacked a "Rocket" battery, silencing one of its guns.

Second Lieutenant DOUGLAS ARCHIBALD COLQUHOUN SYMINGTON, Royal Flying Corps, Special Reserve.

For conspicuous gallantry and skill on September 26th, 1915, when he demolished part of a train which was moving towards St. Amand by bombs dropped from a height of 500 feet. A large portion of the train was completely wrecked, and he observed dead horses thrown out of it by the explosion. The remainder of the train was unable to proceed.

* * *

From the "London Gazette" Supplement, Nov. 1st, 1915.

WAR OFFICE, November 1st, 1915.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—October 5th: Capt. A. V. Newton, Som. L.I., S.R. (since dead.), from an asst. eqpm't officer; Lieut. W. T. F. Holland, 21st Lrs., and seconded; Lieut. F. F. Minchin, P.P.C.L.I.; Temp. Sec. Lieut. A. D. Broughton, Res. Regts. of Cav., and transferred to Gen. List; Sec. Lieut. K. H. Riversdale-Elliott, Scot. R., and seconded; Sec. Lieut. H. W. Butterworth, S.R.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Lieuts. to be temp. capt. November 2nd: C. A. Hooper, C. H. Pixton. Sec. Lieut. (on prob.) E. L. Millar confirmed in rank.

* * *

The following passages in the dispatch received by the Secretary of State for War from Field-Marshal Sir John French, Commanding-in-Chief the British Army in France, and published on November 1st in a Supplement to the "London Gazette," refer to the Royal Flying Corps.

Describing the fighting on September 25th, he says:—

The Wing of the Royal Flying Corps attached to this (the third) Army performed valuable work by undertaking distant flights behind the enemy's lines and by successfully blowing up railways, wrecking trains, and damaging stations on his line of communication by means of bomb attacks.

Further on he says:—

Heavy rain fell throughout the day, which was very detrimental to efficient observation of fire and reconnaissance by aircraft.

Referring to the Artillery operations he says:—

The work of the Artillery in co-operation with the Royal Flying Corps continues to make most satisfactory progress, and has been most highly creditable to all concerned.

The section relating specifically to the R.F.C. says:—

26. I would again call your Lordship's attention to the work of the Royal Flying Corps. Throughout the summer, notwithstanding much unfavourable weather, the work of co-operating with the Artillery, photographing the positions of the enemy, bombing their communications, and reconnoitring far over hostile territory has gone on unceasingly.

The volume of work performed steadily increases; the amount of flying has been more than doubled during this period. There have been more than 240 combats in the air, and in nearly every case our pilots have had to seek the enemy behind his own lines, where he is assisted by the fire of his movable anti-aircraft guns; and in spite of this they have succeeded in bringing down four of the German machines behind our trenches and at least twelve in the enemy's lines, and many more have been seen to dive to earth in a damaged condition or to have retired from the fight.

On one occasion an officer of the Royal Flying Corps engaged four enemy machines and drove them off, proceeding on his reconnaissance. On another occasion two officers engaged six hostile machines and disabled at least one of them.

Artillery observation and photography are two of the most trying tasks the Royal Flying Corps is called upon to perform, as our airmen must remain for long periods within easy range of the enemy's anti-aircraft guns. The work of observation for the guns from aeroplanes has now become an important factor in artillery fire, and the personnel of the two arms work in the closest co-operation.

As evidence of the dangers our flying officers are called upon to face, I may state that on one occasion a machine was hit in no fewer than 300 places soon after crossing the enemy's lines, and yet the officer successfully carried out his mission.

The Royal Flying Corps has on several occasions carried out a continuous bombing of the enemy's communications, descending to 500 feet and under in order to hit moving trains on the railway. This has in some cases been kept up day after day; and, during the operations at the end of September, in the space of five days nearly six tons of explosives were dropped on moving trains, and are known to have practically wrecked five, some containing troops, and to have damaged the main railway line in many different places.

For the valuable work carried out by the Royal Flying Corps I am greatly indebted to their commander, Brigadier-General H. M. Trenchard, C. B., D.S.O., **A.D.C.**

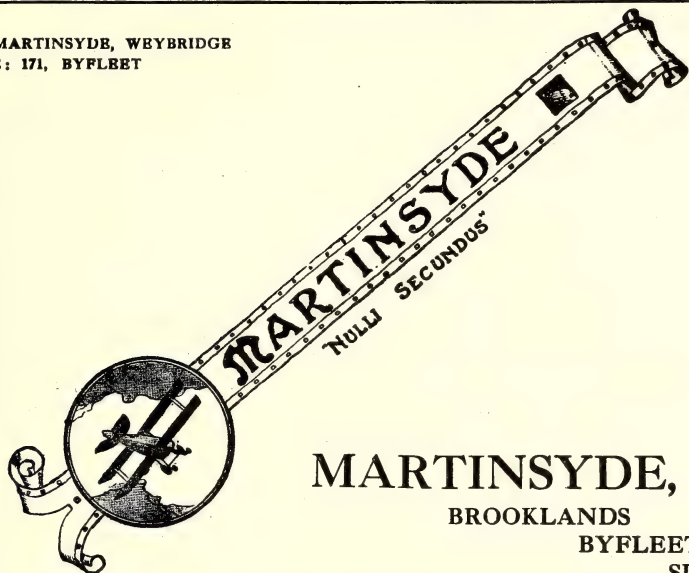
NAVAL.

The following appointment was notified at the Admiralty on October 26th:—

ROYAL NAVAL AIR SERVICE.—Assistant Naval Store Officer—R. E. V. Jelliffe, entered as Flight Sub-Lieutenant on probation, for temporary service, with seniority of October 25th, and appointed to "President," additional, for R.N.A.S.

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The following appointments were notified at the Admiralty on October 28th :—

ROYAL NAVAL AIR SERVICE.—Messrs. J. A. Holder and A. F. Sidgreaves entered as lieuts., R.N.V.R. (temp.), and appointed to the "President," additional, for R.N.A.S., to date October 27th.

Mr. I. K. H. Locke entered as lieut. R.N.V.R. (temp.), and appointed to the "President," additional, for R.N.A.S., to date October 27th.

Sub-Lieut. R. G. Shire, R.N.V.R., temp., promoted to the rank of lieut., with seniority October 25th.

Chief Petty Officers.—G. H. Unwin, H. Bedford, H. N. Speight, S. A. Hickson, P. G. Silley, and J. Paxton entered as sub-lieuts. R.N.V.R., temp., and appointed to the "President," additional, for anti-aircraft corps, to date October 26th.

Messrs. A. E. Popham, R. J. E. S. Dawson, and P. D. Robertson entered as proby. flight sub-lieuts. (temp.), and appointed to the "President II," additional, for R.N.A.S., to date October 30th.

Chief Petty Officer, R.N., E. Chodwick entered as sub-lieut. R.N.V.R., temp., and appointed to the "President," additional, for R.N.A.S., to date October 26th.

The following appointments were notified on October 30th :—

ROYAL NAVAL AIR SERVICE.—A.B., R.N.V.R., G. F. Meager entered as proby. flight sub-lieut. (temp.), and appointed to the "President," additional, for R.N.A.S., to date October 29th.

Messrs. J. D. Moffat and E. Nixon granted temp. commissions as lieuts., R.M., for service in the divisional engrs., R.N. division, to date October 28th and October 4th, respectively.

The following appointments were notified at the Admiralty on November 1st :—

ROYAL NAVAL AIR SERVICE.—Payr. H. A. Michell graded as flight com., May 7th, and appointed to the "President," additional, for duty in the Air Department (temp.) to date October 29th.

The undermentioned have been entered as proby. flight sub-lieuts. (temp.), and appointed to the "President," additional, for R.N.A.S., to date as stated : W. R. M. Hill, E. G. O. Jackson, J. F. Dixon, B. W. Hemsley, J. R. Crouch, E. C. H. Tebb, M. A. Lovell, A. N. Robinson, H. L. Hitch, G. W. Biles, and W. Hocking, November 7th; H. D. Smith, A. T. O. Mann, and A. L. Melhade, November 6th; R. J. MacDougall, October 4th; L. W. Nurse, G. H. Simpson, D. Whittier, and A. B. Shearer, October 6th.

About 4 p.m. on Friday, when the fog was thick, the inhabitants of Crondall Street and St. John's Road, Hoxton, heard calls for assistance out of the gloom above. A descending balloon was seen, and a passer-by conjectured that it was a Zeppelin "giving itself up." It turned out, however, to be a British balloon which had lost its way, the car containing a naval officer. The trail rope was guided to the footway by helpers on a public-house, and there hundreds of people seized it.

The occupant of the balloon had lost his way in the fog, and after drifting among the chimney pots, tried to land in the gardens of St. John's Church. However, the aeronaut was hauled down to the roadway. When the inmates of the neighbouring houses had been warned to put out all lights to prevent an explosion, the balloon was deflated and was taken away in a van.

The following appeared in the wedding column on November 1st :—

SAW—MACLENNAN.—On the 26th October, at Kirkwall, Flight Sub-Lieutenant Arthur C. Saw, R.N.A.S., son of Mr. Samuel Saw, 17, Glenlue Road, Blackheath, S.E., to Harvey, daughter of Mr. and Mrs. W. MacLennan, Grainbank.

MILITARY.

The following passage in the telegraphic despatch, dated General Headquarters, 8.27 p.m., on October 27th, from Field-Marshal Sir John French, refers to aircraft :—

2. Our airmen brought down two German aeroplanes yesterday, one falling in our own lines and the other close behind the enemy's front trenches.

* * *

The following casualties among officers in the Expeditionary Force were reported on October 27th, under various dates not specified :—

MISSING.

Gay, Sec. Lieut. J., Royal Flying Corps.

Previously reported Missing, now reported Killed.

Nixon, Lieut. W. H., Royal Lancaster Regt. and Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were notified on November 1st, without date :—

ACCIDENTALLY KILLED.

Newton, Capt. A. V., 3rd Somerset L.I., attd. Royal Flying Corps.

Tallentire, Sec. Lieut. A. T., 28th London (T.F.) (Artists') Rifles, attd. Royal Flying Corps.

[It is understood that these officers were killed owing to a B.E.2c. stalling in getting off the ground and developing an uncontrollable spiral dive.—Ed.]

* * *

The following appeared on October 29th :—

JAMES.—Baron Trevenen James, R.E., Captain, attached R.F.C., killed in action July 13th, 1915, near Arrêt, close to Hooge, eldest son of Dr. C. A. James, of The Pollard Elms, Upper Clapton, aged twenty-six. R.I.P.

The death of Capt. James was announced in this paper some weeks ago, but this is the first semi-official notification. His age was twenty-six. He was educated at Harrow and Woolwich, and, having obtained his commission in the Royal Engineers in 1909, joined the R.F.C. in 1912. He was mentioned in despatches in February last, and won the Military Cross in June. A month later he was reported "missing." In the notes which appeared concerning his career the interesting fact was omitted that he took his certificate at Hendon after only three days' training.

* * *

The following appeared on October 29th :—

GAY.—On the 10th October, Sec. Lieut. J. Gay ("Jack"), Royal Flying Corps, only son of Dr. and Mrs. Gay, of Putney, aged 22.

Dr. and Mrs. Gay have been informed that their son was killed in action on October 10th, during a fight in the air while photographing over the German lines. He was educated at Felsted, and later became a medical student at St. Bartholomew's Hospital. He joined the City of London Yeomanry and was mobilised at the outbreak of war. In March he was gazetted to the Royal Flying Corps, and served in France for four months, attached to the 16th Squadron. His commanding officer writes, "He was a splendid officer doing most valuable work."

* * *

The following notice appeared in the "Personal" columns of various papers on October 28th :—

CAPTAIN CECIL MARKS, 13th Squadron Royal Flying Corps, Reported Missing in France 23rd inst.—Any Information most gratefully received by his Mother, Mrs. Claude Marks, Carrington Court, Mayfair.

[It is greatly to be feared that Captain Marks has lost his life, for the German communiqué of October 24th, reporting the previous day's events, says :—"A British biplane in an aerial fight was shot down west of St. Quentin. The pilot and observer, both officers, were killed." The almost unvarying accuracy of the enemy's communiqués leaves little room for hope that the capture of a second machine has been overlooked at this date. However, one

MOTURING NOTES.

How the Risk of Injury may be Reduced in Motor Accidents.

The light thrown by the "News" upon the motor accident which occurred on the Great North Road near Bawtry last week must have been appreciated by local motorists, who had heard some strange "explanations" of the tragedy. I am writing these Notes a few hours before the adjourned inquiry into the cause of Mr. Erfus Bailey's death, but one can venture to anticipate the verdict. The affair was a pure accident.

Every motorist at some time must have made the same error, but, happily, without paying anything like such a terrible penalty. Had the telegraph post (with which the car collided) been on the Doncaster side of the railway bridge, instead of the Bawtry side, there would have been no accident, but the post could have been struck and the car smashed without any serious personal harm if the windscreen had been of safety glass. It was not the collision itself, but the broken glass which hurt Mr. Bailey, and, unfortunately, he happened to be a man whose blood would not congeal. That was why he bled to death.

Over eighty per cent. of the personal injuries suffered by passengers and drivers in motor accidents are caused by broken glass. That is something to think over. To avoid such a serious risk I fitted a "J.B.S." car nearly two years ago with Triplex

safety glass, and twice in particular had I reason to be thankful for having done so. On two occasions during the winter before last was the windscreen blown off whilst driving in gales. Had the screen been of ordinary glass it must have been broken, and goodness knows what the consequences would have been; but, whilst the brass fittings were broken, the Triplex glass remained unmarked. Many a time the screen fell on the steering-wheel with a bang that would have shattered ordinary glass, but the Triplex glass is still in service.

It costs a pound or two more than an ordinary screen to start with, but it was cheaper in the end than if the commonest glass had been used, because any other glass than Triplex would have had to be replaced three times or more.

I hope the day will come when safety glass for windcreens will be compulsory. Then motoring will be infinitely less dangerous, and such painful tragedies as that of last week will not be heard of.

Underwriters at Lloyds make a rebate in car insurance of ten per cent. when Triplex safety glass is used.

[Reproduced from THE BATLEY NEWS, October 2nd, 1915.]

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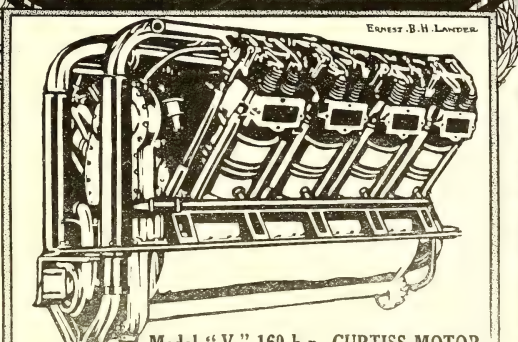


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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

may wait for further information before definitely deciding that this capable young officer and his companion are lost.—Ed.]

* * *

An inquiry was held at Norwich on October 27th concerning the death of an R.F.C. officer, an observer, who was killed on October 26th. The evidence showed that a gusty wind was blowing, and when at about 80 ft. something went wrong with the engine. In descending, the machine side-slipped, and then dived to the ground. The passenger was badly hurt, and died from the effects of the fall, but the pilot was not seriously injured. A verdict of accidental death was returned.

* * *

The following appeared on October 30th :—

SHEKLETON—WATKINS.—The engagement is announced between Capt. Alexander Shekleton, R. Munster Fusiliers, Flight Commander, Royal Flying Corps, son of the late Alexander Shekleton, of Natal, South Africa, and Dundalk, Ireland, and of Mrs. Shekleton, of Blackheath, and Irene Mary, second daughter of Mr. Arthur Watkins, M.L.C.E., and Mrs. Watkins, of Blackheath.

* * *

An engagement is announced between Lieut. J. A. Hartcup, R.F.C., son of the late Mr. H. J. Hartcup, of Upland Hall, Bungay, Suffolk, and Violet, only daughter of the late Vice-Admiral James Lacon Hammet, C.V.O., and Mrs. Clement La Primaudaye, of 10, Lincoln House, Basil Street, and granddaughter of the late Sir Henry Bedingfield, Bart., of Oxburgh, Norfolk.

* * *

On Saturday next, Nov. 6th, the wedding will take place at St. Mark's Church, North Audley Street, of Capt. Louis Arbon Strange, R.F.C., and the Dorsetshire Regt., and Miss Marjorie Beath, daughter of Mr. and Mrs. David Beath, of 3, The Manor House, Marylebone Road, N.W.

Captain Strange, it will be remembered, won a commission in the Dorsets, from the R.F.C. Special Reserve, special promotion to Captain, and the Military Cross, by continued good service in France.

* * *

The following appeared in the births columns on October 28th :—

SALMOND.—On the 26th October, at Brookfield, Alverstoke, Hants, the wife of Lieut.-Colonel W. G. H. Salmond, Royal Flying Corps, of a daughter.

* * *

A soldier on active service, writing home, says :—

"I don't know if Moss told you about the duel we watched between a Frenchman and a Boche. The Boche fellow was hovering over our lines when the Frenchman came out of the clouds. They both used machine guns and the Frenchman won. The Boche came down on our lines, close to where the fourth battalion was on a route march. As soon as they landed, one of them tried to repair his petrol tank while the other manned the gun; but they had no chance, as the battalion opened fire on them, and they were both killed. Hard luck, as they were both brave men. One of them was wearing the Iron Cross and four other medals."

* * *

A Leicester man writing home says :—"Last Monday I had a ride out and passed a French aviation station. They had a German aeroplane there. It was a beauty, and the best of it was that it was mounted with two British machine guns. Passing the place again the same day I was just in time to see Vedrines land on a monoplane."

FRANCE.

The communiqué of October 26th says :—

One of our pilots, on a monoplane, chased to the north of Dormans one of the enemy's machines, which he

attacked at short range after catching it up. The motor of the German machine was struck more than once by machine-gun bullets, and the pilot was forced to come down near Jaulgonne, in the Marne Valley.

The two officers in the aeroplane, one a captain and the other a lieutenant, were captured as they were about to destroy the machine. We succeeded in capturing it intact. It was a high-speed biplane of the very latest pattern.

* * *

It was reported from Paris on October 27th that a committee has been formed by "La Petite Gironde," an influential provincial paper, to bring pressure on the French Government to establish an incontestable superiority in aircraft. The committee insists on having a fleet of 5,000 aeroplanes in addition to those at present existing to attack the enemy in mass with bombs. It claims that with such increased strength the French air fleet could not only bombard the enemy's positions, but could destroy their air fleet and be free from enemy air scouts. The founders of the League include MM. Barthou, Barrès, and Clemenceau, all of whom have taken some interest in aviation in the past, nevertheless, the scheme sounds like some of the futile newspaper agitations in this country started to make the authorities do what they already want to do—if they only knew how—and that is exactly what these committees cannot teach them.

GERMANY.

The communiqué of October 27th says :—

In aerial fighting, Lieut. Immelmann shot down his fifth enemy aeroplane, namely, a French biplane manned by English officers, who were taken prisoners.

Two other enemy aeroplanes were shot down behind the enemy lines. One of them was completely destroyed by our artillery; the other machine is still lying near Souchez.

* * *

The communiqué of November 1st says :—

Lieut. Bseleke on the 30th brought down a French biplane south of Tahure, this being the sixth hostile aeroplane which he has put out of action.

In the region of Belfort several air encounters ended in favour of the Germans.

Eastern theatre of war. . . . Near Olai, south-west of Riga, a Russian air machine was forced to land, and the pilot and observer were taken prisoners.

RUSSIA.

The communiqué of October 30th says :—

South of Baranowitchi, in the region of Gorodischsche, our artillery brought down a German aeroplane, which fell in our lines. Both the pilot and the observer were taken prisoners.

* * *

The communiqué of October 31st says :—

On the Western front one of our Iliia Murometz battle aeroplanes threw bombs on the station of Tauerkahn, south-west of Friedrictstadt. Other machines dropped bombs on convoys of enemy troops in the region of Mitau and Schoenberg, south-west of Tauerkahn.

* * *

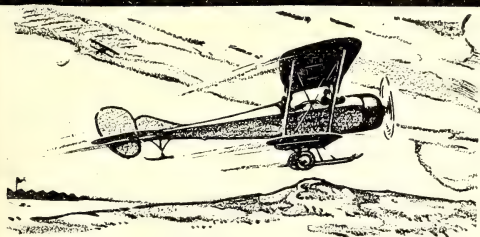
The communiqué of November 1st says :—

In the Gulf of Riga one of our torpedo-boats brought down a German hydro-aeroplane. The aviators were captured.

* * *

It was reported from Petrograd on October 26th that a Russian "giant" aeroplane dropped bombs on a village to the south of Baronowitschi, occupied by the Staff of a German infantry division and German supply columns.

Squadrons of four and five Albatros biplanes respectively attempted to fly over Minsk, but were driven off by Russian artillery. They dropped a dozen incendiary



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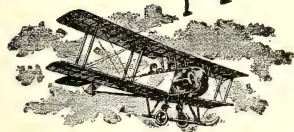
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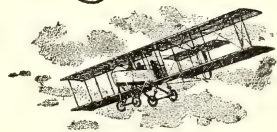
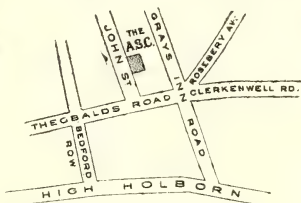
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bombs on the outskirts of the town. One Albatros was brought down.

* * *

It was officially announced in Petrograd on October 28th that a Russian fleet in the Baltic Sea that day bombarded the harbour works at Varna. At the same time aviators dropped bombs on the port.

ITALY.

The communiqué of October 26th says :—

On Sunday we effectively bombarded the enemy's encampments on the Bainsizza and Carso plateaux. An enemy Aviatik was attacked by one of our aeroplanes with a machine-gun and put to flight. All our aeroplanes returned undamaged to our lines.

* * *

The communiqué of October 29th says :—

Our aviators made numerous raids yesterday over the Bainsizza plateau and the Carso front, dropping bombs at several points on the Vallebaca (Idria) railway, on the Gorizia-Trieste railway, and also upon enemy camps, as well as marching columns. Notwithstanding the very active fire of numerous anti-aircraft batteries our aviators returned safely.

* * *

The communiqué of November 1st says :—

Our aviators continue their daring incursions with success. Yesterday they again bombarded numerous military objectives, among them the railway stations of Dino and Nabresina, and trains at the latter place.

* * *

The "Tribuna" (Rome, October 26th) says that the Pope has written to the Patriarch of Venice concerning the raid of October 24th, and deploring "these useless acts of barbarism."

* * *

On October 24th a complimentary déjeuner was offered to the French aviators who have for some time now been co-operating with their Italian confrères in the defence of Venice, the event being held in a well-known restaurant of that city. Much brotherly love prevailed, and some talking. The gratitude of the citizens was duly expressed to their defenders in speeches (with usual trimmings) by members of the nobility, Parliament, and Press.

* * *

On the same night the Austrians came and again tried for the station—and hit a church. Coincidences both events, for the Scalzi Church was last restored, if I am not grievously mistaken, by the Austrian monarch or at his expense!

* * *

The porticos around the principal square and the

porches of public buildings were found useful by the population, who disgorged from theatres and cafés to view the raiders. There appears to have been just enough moon to favour all parties, a night attack being still a novelty where aeroplanes are engaged.

A suggestion that sites damaged should be recorded by tablets as a permanent reminder for all time of bad marksmanship will, if carried out, interest the coming race, whose perfected aim will be a comfort to non-combatants.

* * *

All electric power being cut off, the newspapers presented a sorry figure next morning, "enough to make even the Censor weep," one said.

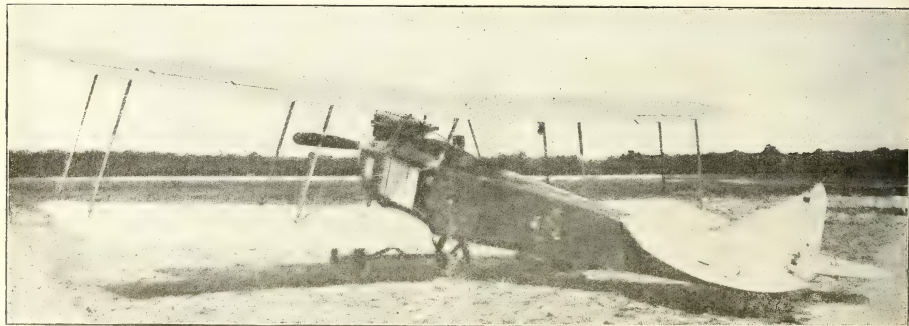
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On the evening of the 25th ult. the first collision between two military aircraft occurred in Italy. The misfortune fell on Mirafiori, and two neo-pilots are lost to her in consequence. Having to rely on newspaper reports in this case, one writes diffidently. However, it seems clear that two small Blériots of 45 h.p. went up for practice flights, and that one turned to the left to start an "8" and met at the waist of the figure the other machine, which was circling the aerodrome, hugging the right. Both came down with great violence only about 15 yards apart, both motors parting company with their machines. The one pilot, Count Marcantonio Omati, succumbed instantaneously; the other, a married man named Albino Giribaldi, lingered a few hours.

One is sincerely sorry for all concerned, for Major Month, O.C. of the schools, and the instructors. At the time there were some fifty volunteers under instruction at Mirafiori, so that with the testing of Caudrons, Voisins, *et omne hoc genus*, and the training of observers, the camp is not letting grass grow about it. It was never an ideal place to fly into or out of, though now much improved and always possessing many other blessings.

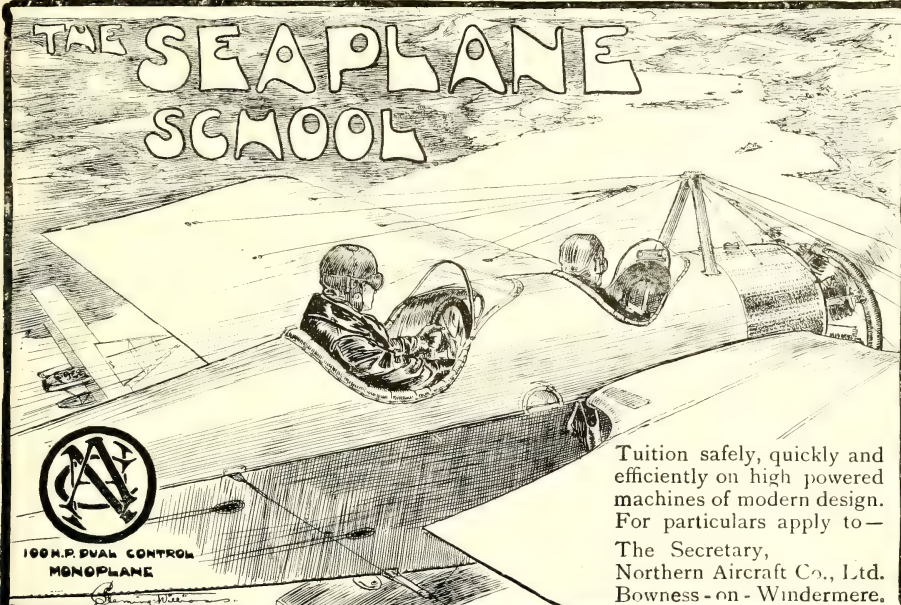
* * *

The successive raids on Venice the nights of October 24th and 25th appear to have been a serious attempt on the part of Germany to avenge the series of Austrian setbacks lately effected by Italy. Threats were dropped promising reprisals on Venice in case of Italian victories some while back. Evidently these night attacks aimed at the complete destruction of the Lagoon City, for I understand that the several attacks were made by different machines working in half escadrille strength. Two or three machines composed the first attacking party, three that of the early morning. Seven are supposed to have started out from Pola on this last effort. The ineffectiveness of the defending A.-A. guns is said to have



The Hansa-Brandenburg biplane on which Herr Reiterer has broken sundry world's records. (See Notes "From Denmark.")

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been due to the dazzling effect of the moonlight on the enemy plus the height of 6,000 feet which he wisely maintained. Damage of a trifling nature, in which three persons were lightly wounded, occurred at the Lido.

AUSTRIA.

The communiqué of October 27th says :—

On the afternoon of the 24th an Italian aviator visited Trieste dropping bombs without causing any material damage. Three inhabitants were killed and several wounded.

A few hours later our naval aviators replied with a visit to Venice where from 10.30 p.m. to 1 a.m. in quick succession they abundantly and successfully bombarded the arsenal, electric power station, railway station, some fortifications, and other military buildings with bombs of medium and heavy calibre, causing numerous fires.

Next morning at eight our squadron of naval aeroplanes again attacked Venice, where the fires from the previous attack were still burning. In addition to the buildings previously mentioned, the aviators this time also successfully bombarded a flying shed and war vessels. Weak attempts by two enemy aviators to disturb our attack were quickly frustrated by our rifle fire. At both attacks our aviators were heavily but unsuccessfully fired at by artillery. All returned unharmed.

* * *

The communiqué of October 29th says :—

An Italian aviator bombarded the Castle of Miramar.

* * *

The communiqué of October 31st says :—

South-east of Luck another enemy aviator has been shot down.

BELGIUM.

It was reported from Amsterdam on Monday, November 1st, that on Saturday morning six Allied aeroplanes were sighted over Liège. They were fired at from the fortresses, but escaped undamaged, and made off towards Brussels.

[From the nearest point of the fighting line to Liège is about 100 miles.—Ed.]

PALESTINE.

The correspondent of the Paris "Temps" at Alexandria states that a French seaplane flew over Beirut to Mount Lebanon to attack the railway between Beirut and Damascus. The seaplane was damaged by Turkish fire, but was able to drop bombs, killing some soldiers on the roof of a house.

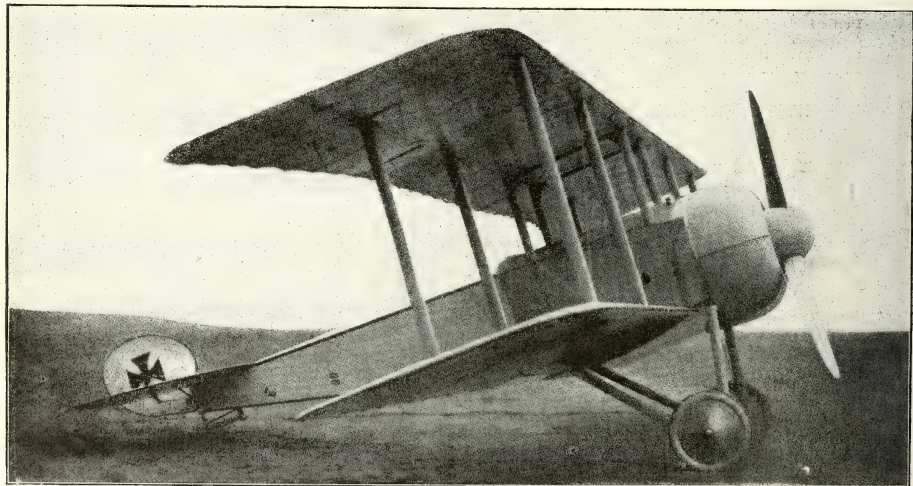
FROM DENMARK.

Conditions of activeness prevail in Germany, reflecting in the formation of many new companies, which it should be well to register for the benefit of English readers, who may some day meet with their names, and for the pilots, who may come to engage in the air with their products. Dr. Hansen's Rex aircraft company for manufacturing imitations of Bristol scouts and Morane monoplanes has already been mentioned, and by financial manoeuvres, the "German Aero Co., Ltd.," formed during the war by Austrian-German combinations, has now raised its stock from 700,000 marks to 1½ million, getting thus the biggest concern in the German trade, and taking over the Brandenburgische Aircraft Works (into which the old Etrich Company had changed), and the Hansa Aircraft Works in Hamburg of the well-known aviator Carl Caspar.

As a celebration the chief pilot Reiterer has, on the company's new 160-h.p. Mercedes tractor biplane, designed by the director, engineer Ernst Henkel, beaten two records with three and four passengers, attaining on September 22nd in a flight of 58 minutes with four passengers, the total weight of which together with his was 326 kilos [735 lbs. about, or 10½ stone apiece.—Ed.] the altitude of 5000 metres (the old record of February 25th, 1914, standing to the credit of Garaix with 3,300 metres), and raising in the evening of the same day the record of von Lössl with 4,770 metres from the Vienna meeting, June, 1914, to 5,500 metres in a flight of 1 hour 8 minutes with three passengers, landing in complete darkness. When shall these records have the confirmation of the Fédération Aéronautique Internationale?

Other firms absorbed into this combination are the "Mercur Aeroplane Co.," in Berlin, Johannisthal, with a branch in Neukölln, "Taifun Aircraft Works," in Berlin-Neukölln, "Aeroplane Works Stolz," Berlin-Neukölln, and in Austria : "Austrian-Hungarian Aircraft Works."

One of the German flying sub-officers, by name Putzika, who stranded months ago with a seaplane at the island Fanoe and was afterwards interned with calling-fellows and countrymen at Odense, according to information received at the latter city, after having some time ago succeeded in escaping to Hamburg, and therefore said to be awarded the Iron Cross, as the Emperor's general award to officers returning from forced stay in hostile or neutral country, has been shot down by the French.—Hi.



The new Ago scout, fitted, presumably, with a Stahlherz Engine, as that is the German version of the Gnome.

THE INVASION OF ENGLAND.

On October 26th there was more discussion about Zeppelin raids. At an inquest on one of the casualties, Mr. Hare, a Treasury solicitor, representing the Admiralty, was asked if he had anything to say, and replied that anticipating such a question, he had seen Sir Percy Scott personally. Sir Percy had authorised him to make the following statement:—

The number of guns for defence against aircraft has been recently increased, and further improvements as to the position, number, and character are in immediate contemplation.

Sir Percy also wished to warn people of the danger of being struck by fragments from our anti-aircraft guns in the streets.

In the House of Commons, on the same date, Mr. Balfour made it clear that the Admiralty are responsible for the defence of London and most parts of the country against aircraft, but that certain places—for example, fortified ports, are defended by the Army. As far as concerns casualties and non-military matters, the Home Office is responsible for publishing information.

Answering the question as to who was responsible for orders issued to aeroplanes, he said: "It depends whether the order is given to a member of the Naval Flying Corps or the Army Flying Corps." The published report adds "(laughter)." It would be paying the House too high a compliment to assume that its cackinnation was caused by the First Lord's ignorance of the correct title of the Air Service which he is supposed to represent.

Mr. Balfour also said: "No attempt has been made to increase the number of aeroplanes in consequence of the last raid, but there has been a steady and rapid increase in the number of aeroplanes, and that increase is going on quite irrespective of the defence of London or of any other part of the United Kingdom. It is part of the general policy of the Government." The pity is that the Government does not set about this part of its policy with greater intelligence, as it would be easy to double the output for the same expenditure in the same time.

As regards rumours of well-known people being arrested for signalling to enemy airships, Sir John Simon said that two men had been arrested. One of them had been

discharged, and the other had been detained, but not on a charge of signalling.

On the 27th, Mr. Fell wanted to know whether troops in this country had orders to fire at Zeppelins whenever they came within rifle-range, or whether they had to wait for orders from headquarters. Mr. Tennant replied that the orders are to fire at Zeppelins "if and when they offer a target," and that he did not think there would be any reluctance on the part of the troops. This statement was greeted with cheers and laughter, members of Parliament thus indicating, as usual, their ignorance of modern war.

It should be evident to any thinking person that rifle-fire against Zeppelins is futile, the only possibility of damage being that a lucky shot may pierce a petrol tank and so cause a leak which sets the whole thing on fire. Such a long chance is not worth taking when one remembers that rifle fire from the ground discloses the presence of troops and affords the commander of the airship a perfectly legitimate reason, legal and moral, for bombarding the locality.

It is on record that a Zeppelin, after passing right over an important and thoroughly darkened town without seeing it, was fired at by troops quartered in and near quite a small town a good many miles away. The ship promptly turned back and bombarded the place, doing an immense amount of damage, and, I believe, killing some people. If the few hundreds of soldiers there had been kept quiet, as the many thousands in the bigger town were, the place would have been overlooked.

It is utterly useless to open on an airship with anything except a proper anti-aircraft gun manned by trained and experienced gunners. Anything else is merely asking for trouble and justifying the German claims to have bombarded only "fortified places"—a fortified place being one capable of committing an act of war.

The "Express" states that a system by which approaching Zeppelins can be located is claimed to have been discovered by Dr. Lee de Forest, the American inventor, who has just arrived in this country. "My invention, which I am submitting to the British Government, is a protective, not a destructive device," said Dr. de Forest to a



The First Camp of the South African Flying Corps—Union of South Africa Forces—in German South-West Africa. Taken from a British aeroplane.

"Daily Express" representative. "It will give warning of the approach of Zeppelins, and so allow them to be met by aircraft or gunnery fire before they can do any harm. My device will record air waves made by Zeppelins on a microphone. These air waves will be magnified by the audion amplifier, of which I am the inventor, until they are of sufficient force to be registered. The system is conducted in much the same way as the British Navy uses the microphone to record the approach of a submarine."

There is nothing startlingly new in the idea and it should fit in nicely with the scheme of "listening stations" suggested in this paper last week.

* * *

The enthusiastic but unpractical people who keep on crying out for aeroplane patrols over London do not seem to realise that they are simply playing the Germans' game for them. If by sending an odd Zeppelin or two over here once or twice a month the enemy can terrorise the Press into making such a row as to oblige the Government to keep a couple of hundred aeroplanes and pilots in this country when they ought to be helping the Army in France or the Fleet at sea the Germans have very much the best of the bargain.

Further, if a British aviator or two is killed through trying to land in the dark every time there is a Zeppelin raid the Germans may flatter themselves that they are doing work of serious military value.

Similarly those who so strongly advocate "retaliation" conveniently forget that they are asking the Naval and Military authorities to deprive the fighting forces of valuable military adjuncts in order to risk them on work which can be of no direct military value. If these good people would only support this paper's agitation for more aeroplanes, and better aeroplanes, and less theorising and experimenting by pseudo-scientists they would be doing real service to the country. As it is they are merely doing harm.

* * *

Mr. C. Grahame-White writes:—

Sir,—As, in your last issue you refer to my presence at the Croydon Meeting, you will, I am sure, permit me to state the facts.

My letter to the "Globe" newspaper on the 21st ult. explained that I had no intention of taking any part in the proceedings, and it was only on being observed in the body of the hall, and in response to the strongly expressed wishes of the audience, that I was induced to say the few words I did. They consisted merely of some anecdotes and an explanation of why, having so recently resigned my commission in the R.N.A.S., and in my position as a Government contractor, I could not offer any public criticism of the Departments concerned with our Air Services. I referred to the general apathy towards aviation in its early stages, but I said nothing whatever about inventors or their official encouragement, so that your comments upon that point, although I have no quarrel with them, are beside the mark.

It is not for me to pronounce as to whether your remarks on the subject of efficiency in those Departments of the Services which deal with aircraft are justified, but why, if there be room for improvement, you should suggest, as you appear to do, that I am in a position to effect it, I am at a loss to conceive.

(Signed) C. GRAHAME-WHITE.

[Every manufacturer of aircraft is in a position to increase efficiency in the production of aircraft in his own sphere of influence. One is glad to note that the various reports of Mr. Grahame-White's speech misrepresented him. His considered opinion quoted above is beyond reproach.—Ed.]

ALICE IN HENDONLAND.

Alice was beginning to get tired of sitting in the half-crown enclosure and having nothing to do. All the morning she had been suffering from Fog in the Throat, and could see nothing. Of course, there was nothing to see, for all the aviators and all the pupils were staying in bed, as they always do when they get the chance. Alice liked to do so herself sometimes, but this was a Saturday—the last Saturday in October—and she had promised to go to the Hendon Aerodrome with the Mad Hatter and one or two other friends. Everybody went there sooner or later, and, as the weather was getting colder and wetter, she wanted to go there sooner.

The Dormouse was there, too. Somebody had put a large megaphone on his head, so that nothing could be seen but his tail. "Very uncomfortable for the Dormouse," thought Alice, "only as it's asleep I suppose it doesn't mind. And, anyhow, nobody wants the megaphone just now."

"What's the use of a March Hare in an October Fog?" said the Hatter suddenly.

"I don't know," said Alice. "What IS the use?"

"Nobody knows," said the Hatter solemnly. "There is no use." The March Hare looked round angrily.

"Have some wine," said the Hatter in an encouraging tone. Alice looked around the table at which they were sitting, but there was nothing on it except plates and teacups. "I don't see any wine," she remarked.

"You have to buy it for yourself," said the Hatter.

"Then it wasn't very civil of you to offer me some," said Alice angrily.

"But if I had bought you some I should have had my head cut off," replied the Hatter. Alice could not think of an answer to this, and began to feel she was unkind to say what she had said, though she was not sure exactly why. It seemed time to change the subject. "The fog has gone," she said at last. "Now we shall see some flying."

An attendant in uniform came towards them. He looked rather like the Knave of Hearts, but several of his medals were the wrong shape for that. He took up the megaphone and called through it: "Mr. Roche-Kelly is making a flight, accompanied by a passenger."

That was what he tried to say, but he had not noticed the Dormouse, who was still wedged in the other end of the megaphone, fast asleep, so it sounded like "accompanied by a Dormouse." Alice thought this quite amusing, and was going to say so, but by this time there was so much to look at that she could not speak.

The sun was shining, and the place was full of aeroplanes. Some were on the ground, and others kept flying about. She counted twenty at once.

Suddenly she heard the voice of the Mock Pupil at her side. He was asking her, with tears in his eyes, if she would lend him a hundred pounds.

"Whatever for?" said Alice, in surprise.

"I want to learn to fly," he sobbed. "Once I was a Real Pupil for a week, but they sent my cheque back."

"You poor thing!" said Alice. "What do you do for a living now?"

"I write poetry," he replied. "Listen to this:—

"Will you roll a little faster?" said a Caudron to a Wright.

"I'm not in any hurry, but I MUST get home to-night. See how eagerly the pupils on the box-kites all advance. They are anxious for their tickets, so that they can go to France."

Will you, won't you, will you, won't you,
Won't you join the schools?"

"You can really have no notion how delightful it will be
When they take us on (I DON'T think) to assist the
R.F.C."

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But the pupil said: 'Too long, too long! I'm not a (censored) fool.'
And added life was far too short to join the blinking school.

"What matters it how long we take?" the school instructor said.

'You'll have another chance to fly, I fancy, when you're dead.

The more we keep you waiting, sir, the less you have to pay.'

The pupil smiled and shook his head, and slowly walked away.

He said he would not, really could not,
Would not join the school."

Alice thought it a sad story, and asked if he had done any more like that. The Mock Pupil replied that he had several more samples, and when the noise of the machines grew a little less he might try again, but it was quite an hour before he had another chance. By this time one aeroplane was seven thousand feet in the air, and almost out of sight. At last it began to descend, and when it returned the occupants were heard to say they had seen the mouth of the Thames, and a great deal more besides, but they were too cold to keep flying any longer.

"It must have looked like a geography lesson," thought Alice.

The poet was speaking again, and she heard these words:—

"'Tis the voice of the pilot. I heard him declare:

'You have worked me too hard—there are bumps in the air.'

As a duck with its eyelids, so he with his nose
Takes his belt and his cap off, and pulls up his hose.
When the aerodrome's empty, he's gay as can be,
And will sit and drink whisky—I should have said tea.
But when the wind blows, and there's passengers round,
His Gnome has a timid and tremulous sound."

"Why do they learn to fly here?" interrupted the Hatter, who had not been listening to the poems.

"So that they may be able to go and destroy Zeppelins, of course," said the March Hare.

"What's a Zeppelin?" inquired the Hatter.

"One of those big long things the Germans come over in to throw bombs at us from," said Alice. "I've seen them in the West End, only the Censor won't allow me to say so."

"What's a Censor?" said the Hatter, who was always wanting to know things.

"Everybody knows what a Censor is," said the March Hare. "He's a——" Just at that moment another engine began to make a big noise, and Alice never heard the answer.

"Suppose one of the bombs hits you," said Alice, "what do you do?"

"You ask the man who threw it whether he will have a cigar or a nut," replied the Hatter. . . .

There was a great commotion in the middle of the field. One of the aeroplanes had suddenly disappeared somewhere beyond the railway, and everybody ran across to find out what had happened. A car with an ambulance on it went off to see if anyone was hurt, and some of the other aeroplanes flew in the same direction. Mr. Virgilio was the missing man, and Alice grew very concerned, but after a while he walked back with a twinkling smile and said he was all right, and his machine was all right, too, but his engine was all wrong.

The air was full of aeroplanes of all kinds, especially Caudrons, and it seemed as if some of them must run into the others. It was quite exciting to watch, and everyone who had a machine was flying, except perhaps Mr. Hall. At last it got too dark, so Alice thought it

time to go home. As she was on her way to the gate the Dormouse, who had been forgotten by everybody, suddenly awoke.

"What's the difference between a Proflightsubloot and an Aviator?" he asked. The Mad Hatter got very mad. "You've missed all the flying!" he said, crossly. "If you don't come along at once you won't get a ride back with Mr. Hall in the beautiful Cadillac."

They all rushed through the mud in the direction of the Hall sheds and climbed into the Cadillac, and in a very few minutes were back in Town.

"What IS the difference?" said the March Hare as they were getting out.

But the Dormouse had gone to sleep again, so they never found out.

"It is going to rain to-morrow," said Alice, "so I shall stay at home."

And it did, and she did, and nearly everybody else did, too.—D. W. T.

Weather Report.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
London District	Fine	Fine	Fine	Fine	Fog	Fine	Rain
South Coast ...	Fine	Fine	Dull	Fine	Foggy	Fine	Rainy
Lake District ...	Gale	Gale	Fine	Fine	Fine	Misty	Gale

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Moody and Ovens.

Pupils doing figures of eight or circuits alone: Prob. Flight Sub-Lieuts. Gammon and Man.

Do, with Instructor: Prob. Flight Sub-Lieuts. Aplin, Cross, Davenport, Graham, and Sadler.

Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Ed. Baumann, Ruffy, Ami Baumann, and Winchester.

Pupils with instructor: Messrs. Cole, Harkness, de Grauw, Barnard, Coppens, Wood, Cuthbertson, Bolton, Laidlaw, Thomson, Yule, Lannoit.

Pupils doing straights or rolling alone: Messrs. Bailey, Liddell, McBaine, Sherwood, Griffith, Stewart.

Pupils doing figures of eight or circuits alone: Messrs. Stewart, Liddell, McBaine, all progressing favourably.

Certificate was taken during the week by Lieut. McBaine, who passed in good style.

Machines in use: Three Ruffy-Baumann tractor biplanes, 50 and 60 h.p.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Baldwin, Beggs, Bond, Bowick, Brown, Brynildsen, Byrne, Campbell, Collett, Collier, Cowper, Delves, Duffus, Fawcett, Fellowes, FitzHerbert, Fox, Gayner, Hodgson, Kirkwood, Lashmar, Litton, Mellings, Middleton, Nash, Nicholson, Podmore, Richard, Schollaert, Thompson, Halford-Thompson, Willmet, Samter, Hughes, Barrow.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractor biplanes.

Exhibition flights were given on Saturday by Messrs. Beatty, Roche-Kelly, Kenworthy, and Virgilio.

AT THE HALL FLYING SCHOOL.

The following pupils received instruction during the week: With Mr. H. F. Stevens—Messrs. Brandon, Bangs, Hall.

With Mr. C. M. Hill—Messrs. Broad, Nicolle, Butterworth, Drew, Stirling, Dodd, Dresser, Shum, Rattray, Manly, Sepulchre, Cook, Hall.

With Mr. Charles Bell—Messrs. Wooley, Lieut. Bell, Redford, Mann, Smith, Ormerod, Cumberbirch, Arnsby, Capt. Grey, Milbourne, Cosgrave, Chapman.

The following pupils qualified for their certificates: Messrs. Brandon, Bangs, and E. Hall.

Machines in use during the week: Hall (Government type) tractor biplanes.

One of our pupils whilst flying on the Hall brevet tractor had the misfortune to lose his way in the clouds, and had to make a forced landing several miles away from the aerodrome; this he effected with complete success in a small field without the breakage of a single wire. Mr. H. F. Stevens flew the machine back to the aerodrome.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Messrs. Franck, Gammon, Holman, Howe, Henshaw, and McConnell.

Pupils doing figures of eight or circuits with Inst.: Messrs. Fraser, Horridge, and Hughes.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. C. Smiles, and C. M. Jacques.

Pupils: Messrs. Porter, Heyn, Summerskill, Burgess, Atkinson, Jackson, Braim, Hunt, Lambert, Hardy, Thorpe, Roberts, Woods, Lees, and Dawson, rolling. Messrs. Jowett, Lewis, Lockett, Knowles, and Renton, straights.

Figures of eight or circuits alone: Messrs. Little, Franklin, and W. Warren, jun.

Certificate taken during week by Mr. R. A. Little.

Machines in use: Four L. and P. tractor biplanes.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding, J. Lankester Parker, and W. Laidler.

Pupils with Instructor on machine: Miss C. Rowland (30), Messrs. Coats (10), Lieut. Stubbs (23), Ruthven (20), Lieut. Manning (19), Jeffries (13), Lindner (7), Moore (52) (extra practice).

With Pilot as passenger: Messrs. Coats (14), Benson (17), Shaw (18), Inglis (16), Part (17), Lawton (14), Barber (17).

Figures of eight or circuits alone: Messrs. Robertson (10), and Macintyre (11).

Machines in use: N.A.C. 80 Gnome propeller biplane. N.A.C. Blackburn 100 Anzani dual-control tractor monoplane.

The 100 Anzani Blackburn monoplane was out for the first time on Tuesday, Mr. Ding taking her up and handling her with his usual skill. She is a credit to Messrs. Blackburn. It speaks well for them that the machine, a new type, was able to carry on tuition without any alteration or adjustment.

CHRISTENING THE FIRST-BORN.

Sunday last was a wet, depressing kind of day, but there was a very cheery gathering down Richmond way. The first aeroplane ever built by the firm had been completed at the works of the Whitehead Aircraft Company, Ltd., and the occasion was too important in local history to be lightly passed over. It was arranged, therefore, that the machine should be christened, and the ceremony was performed by Mr. J. A. Whitehead's charming seven-year-old daughter Hélène, her name being inscribed on the fuselage.

An assemblage of notabilities thoroughly enjoyed the proceedings, and the Mayor of Richmond gave an eloquent speech. The workmen were told by Mr. Whitehead they might take a holiday for the rest of the day, and he invited them to a dinner in the near future, which aroused boisterous enthusiasm.

The guests were later entertained to a luncheon at the Castle Hotel. Many interesting speeches were made, the speakers including Lieut.-Col. Mackay, Dr. A. Lynch, M.P., Mr. J. E. Davenport, Mr. Gordon, and others.

Mr. Whitehead was naturally proud of the fact that his first machine had been completed in record time, although in the face of many difficulties. A number of other machines are rapidly approaching completion, and hearty congratulations were offered to Mr. Whitehead on the excellent finish of the first.

A keen body of men have been got together, with a capital works manager in the person of Mr. J. Ward, and there is every reason to expect a prosperous career for the Whitehead Aircraft Company.—D. W. T.

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The dimensions are as follows:—Over-all length, 28 feet 6 inches. Span of top plane, 39 feet. Span of lower plane, 28 feet. Chord, 5 feet. Gap, 6 feet. Total area of planes, 360 square feet. Loading, 4.3 lbs. per square foot. Hull: Length, 24 feet 6 inches. Top beam, 44 inches. Bottom beam, 36 inches. Maximum depth, 42 inches.

The hull is of mahogany with crowned decks, V bottom forward and hydroplane design, thus securing minimum head resistance with great seaworthiness and comfort in the water. Over the framework of ribs running to a large keelson is ribband planking covered below the water line with metal. There are two cockpits, the forward one for pilot and passenger, and the other for additional passengers and extra gasoline. All seats are upholstered with black auto leather and provided with shoulder straps for rough weather.

The wings are in six sections, four main planes with two detachable overhanging planes. They are of the latest built-up type, with very strong I-beam wing spars. The fabric is high-grade Irish linen treated with seven coats of Emallite and varnished, making it water and moisture proof and very strong and durable.

Ample strong standard steel cables of Roebling manufacture are used. The joints are designed for slightly more strength than the wire itself.

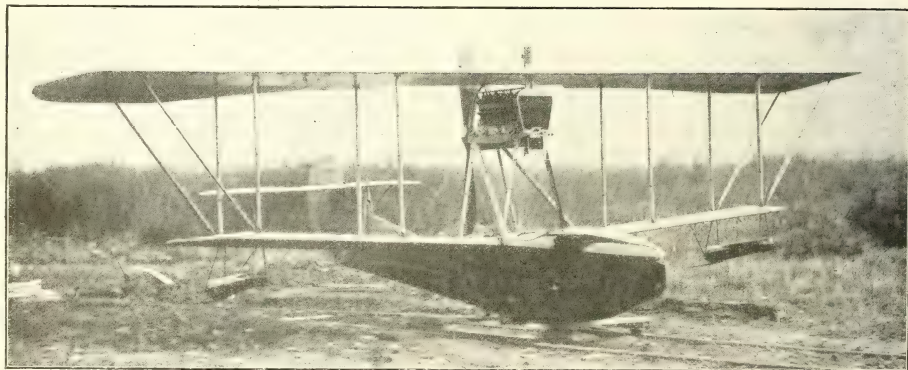
All fittings are specially made, are of latest and best design, and are of high tensile steel, Binet (French) turn-buckles, very strong, rust-proof, and of good appearance, are used exclusively.

All interior wooden parts are treated with a water-proofing solution. All exterior parts of wood and the hull and struts are finished in natural wood. All metal parts are made rust-proof by special primers and paints.

The elevator is operated by pull and push on the steering wheel, which is on a large pivoted post. The elevators are hinged to an adjustable stabiliser. The rudder is operated by rotation of the wheel, which is also furnished with a throttle control. The ailerons are hinged to the outer extremities of the top rear spars. They are operated by foot pedals with comfortable stirrups, but, if desired, the control can be transposed to the usual European rudder bar, with wheel control for the ailerons. The control wires are covered by removable floor boards.

The 90-h.p. Austro-Daimler motor has been adopted on account of its extreme reliability and all-round efficiency. In design and workmanship this engine is of the best. It uses only nine gallons of gasoline and less than one-half gallon of oil per hour. The motor is mounted on four streamline ash struts braced with heavy spruce compression members.

Two twelve-gallon tanks in the hull, under the centre of gravity, carry the normal load of gasoline. The gasoline is fed to the carburettor by the Stewart vacuum system. The machine weighs 1,250 lbs., unladen.



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Two new Thomas machines are reported ready-for test. These are the Navy seaplane, type HS, with Sturtevant motor, and the new Military tractor, type D2, which is equipped with the new 135-h.p. Thomas aeromotor. The first of these motors has been run daily during the week for the purpose of testing, discovering any weak points, and obtaining proper adjustments.

Mr. Walter L. Brock, hero of London-Paris, London to Manchester, and London-Brighton races, has joined the Thomas Company and will pilot the new machines in their tests. He has taken the place left by Mr. Frank Burnside, who is now flying at Sheepshead Bay.

CIRCUS TRICKS.

According to the motor-cycling Press, the staff of the Royal Aircraft Factory held a motor-cycle race meeting on Saturday, October 23rd, at Brooklands Track, presumably to work off superfluous energy which had accumulated during the past twelve months or so.

During the proceedings, to quote "The Motor-Cycle," "Lieut. Goodden, R.F.C., chief experimenter to the R.A.F., flew over from Farnborough in one of the very latest Army airplanes (*sic*). Never since the time when poor Pégoud came down to the track and looped the loop has Brooklands witnessed such marvellous flying. His control of his machine was wonderful, and his turns, twists, and gambols in the air momentarily took all interest from the meeting. Then while the competitors were waiting to be sent off on the first final he swept down the track at a tremendous speed, just clearing the string of flags that marked the finish. We kept our eyes upon the wires which run across the finishing straight. Goodden seemed to clear them, but when he had passed they lay in a tangled mess on the ground, and the pad-dock clock stopped at 2.20 p.m. This is apparently all the damage done, the poor timepiece, which is worked electrically, being thus deprived of its source of energy. Goodden then swept sharply up, banked at a seemingly impossible angle, swept down the straight again, just skimming the track, and hurtling towards the anxiously awaiting competitors at the start. At the last moment he raised his elevator and shot up into the air. He terminated his exhibition with a brief spell of 'hands off' flying."

Now the R.A.F. have as much right to hold a bean-feast as anyone else; but it would be interesting to know who gave Mr. Goodden permission to hold a one-man circus on "one of the very latest Army airplanes." At this time, when aeroplanes are so urgently needed by the R.F.C., it seems scandalous that a new machine should be played with in this manner.

Mr. Goodden should also realise that now he is a Government employee he has no right to risk his life in acrobatic performances. It also seems quite unnecessary that the last thing in "Army airplanes" should be exhibited to the assorted gatherings that are found at motor-race meetings.

THE NAVY'S NEED FOR SKILLED ENGINEERS.

Munition work as it is understood to-day—that is to say, in the shop and the factory—forms by no means the only opportunity for skilled engineers to serve their country at the present time. The Navy is always glad of their services. Transference from munition work to the Navy is not encouraged, but amongst those skilled mechanics who are not at the present moment engaged on munition work there must be many who would be glad to find an outlet for their technical abilities by joining the Navy. It is felt that if the opportunities and the requirements which exist in this respect were more fully known, there would be no difficulty in keeping up the supply of electrical artificers and engine-room artificers who are needed by the Navy.

This branch of the Service has many attractions, not the least of which is the comparatively high pay received,

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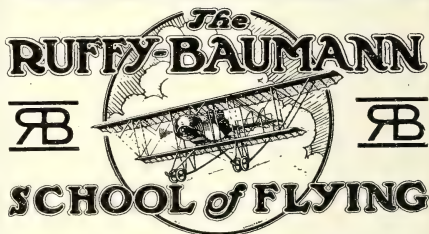
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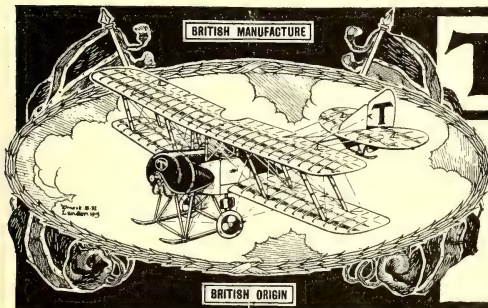
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which amounts on entry to nearly £2 per week, and which may be very considerably improved by good service. As they enter the Navy with the rating of chief petty officers, they mess in the chief petty officers' mess and have the same opportunities for leave when they are in port. Their opportunities for advancement to commissioned rank are excellent.

During the period of the war, men are accepted between the ages of 21 and 45. For rating as engine-room artificers, men who have experience and are competent workmen in the trades of engine-fitters and turners, copper-smiths, boiler-makers, and engine-smiths are required.

Fitters, turners, and instrument-makers are required by the Navy as electrical artificers. Candidates for this rating are accepted for the period of the war between the ages of 21 and 45. The pay is also the same as engine-room artificers, and an examination in fitting and turning or instrument-making is imposed.

Electrical artificers may be recommended for a practical course of training, which is carried out on board the "Vernon," which is moored at Portsmouth, or on board the "Defiance" at Devonport. During this period they may be accommodated either on board ship, or in the naval barracks which are situated in these two towns.

These avenues to naval life are certainly not to be neglected by skilled engineers. There is no quicker way of entering for actual service, and none which secures immediately better pay, prospects, and position. Entering the Navy as a chief petty officer, a man immediately steps into a rank which takes the man who enters as ordinary seaman many years to achieve.

THE GREAT BRITISH INTELLIGENCE.

It is, of course, known to all the world by now that several aeroplanes are being made in America, and that a certain number of them have actually been sent to England, though, no doubt, it would be contrary to our new laws to say whether they are being piloted by sailors, soldiers, British civilians or American aborigines. A little while ago two of these aeroplanes were being flown across country, when one of them was compelled to land, and the pilot of the other one came down to investigate the trouble. The usual inquisitive crowd gathered, and started pelting the pilots with questions about the machine; but the pilots not being in the best of tempers, the crowd got no change out of them. Presently a blushing damsel of about nineteen enlightened the crowd by announcing, "I know all about these aeroplanes. They are Good-years. I can see the name on the tyres." The pilots did not think it worth while to enlighten her further.

As the aeroplanes were delayed for several hours by fog, some hundreds of people inspected the machines at close quarters, and, in spite of a military guard, spotted the name-plate of the American makers, so that the news passed round that two American machines had landed. As the pilots were going off to lunch with a hospitable farmer, an old lady drove up in a victoria, beckoned to them, and asked, "Are you the drivers of these aeroplanes?" The aviators modestly admitted that they were "the pilots." "They are American aeroplanes, are they not?" asked the old lady. The pilots admitted her accuracy, though by this time they were more interested in lunch than in aeroplanes. "Oh, really!" remarked the dear old thing, "and have you flown from America this morning?" The reply of the pilots is not recorded.

A BOOK TO READ.

There must be a good many officers and men among those who have joined the Flying Services recently who have but a dim notion of the working of internal combustion engines, and even in these days there are some car owners whose only knowledge of compression is that it makes the starting handle hard to pull over, so that a

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really readable book on the subject should be of considerable value.

Mr. F. J. Keen, head of the Motor Car Engineering Department of the Regent Street Polytechnic, has written a book entitled "The Petrol Engine," which seems exactly to meet this need. This work is not a text-book in the ordinary sense, it is merely an extremely concise narrative of the different functions of a petrol motor, commencing at the beginning with the four phases of the Otto cycle of suction, compression, power and exhaust strokes, illustrated by speaking diagrams.

The chapter on carburettors and carburation should enlighten many on the mysteries of transubstantiation, which go on in what Mr. de Holden-Stone is pleased to call the "joy-pot." Each operation of the motor is dealt with separately, and ignition, lubrication, and cooling are faithfully dealt with.

More advanced readers will be interested in a description of an ingenious two-stroke motor designed by Mr. Keen with a view to overcome the low volumetric efficiency weakness of this type of motor.

It must be clearly understood that this book does not treat of aero-engines, but of petrol engines generally, but it will serve as an excellent introduction to the subject for those who have got to start from the beginning, especially as aero-engines are becoming more like their sisters of the road every day.

It is only necessary to say that this work contains about seventy excellent diagrams and illustrations and that it is published by E. and F. N. Spon, Ltd. The price is 4s. net, and copies can be obtained from the publishers of THE AEROPLANE, Wm. Dawson and Sons, Ltd., 2, Brems Buildings, E.C.

DO MOTOR-CARS GUIDE ZEPPELINS?

The amount of nonsense written to the newspapers by suburban correspondents on the subject of air raids shows no sign of diminishing. Someone writes to the "Pall Mall" to prove that motor-cars are employed to guide the Zeppelins to their destinations. He asserts that the light from head-lights having a glass front eight inches in diameter would be visible to a Zeppelin 14,080 feet high, and that she would then be perpendicular to a spot only two miles from where the motor light was observed. This is offered as a reason why motor-cars should be prohibited in and out of London immediately after night-fall.

As no Zeppelin is likely to attain a height of 14,000 feet, apart from the odd 80, it does not appear to matter how high the lights are visible. The intelligent correspondent does not explain how the raider chief is to pick out the right motor light from the thousands which would probably be moving about London, unless it had more powerful lamps than all the others, in which case the police might have something to say long enough before the Zepp. arrived.

Perhaps it would be asking too much of the Press Censor to suggest that he should weed out before publication some of the rubbish on aircraft with which most of our daily contemporaries fill their columns.—D. W. T.

IDENTIFY YOUR PARTS.

Apropos transfers, Messrs. J. H. Butcher & Co., of Birmingham, point out that it is advisable for makers of aircraft to apply a small and easily identified transfer to every important part of an aeroplane which they manufacture. One can cordially agree with this view because it might easily happen that a part made by one maker might be used as a replacement in a machine built by another maker, and the collapse of this part might cause an accident and bring the blame on to the maker of the machine, unless he could show that all spare parts made by him bore his mark.

The point is well worth consideration by those who are ordering transfers.

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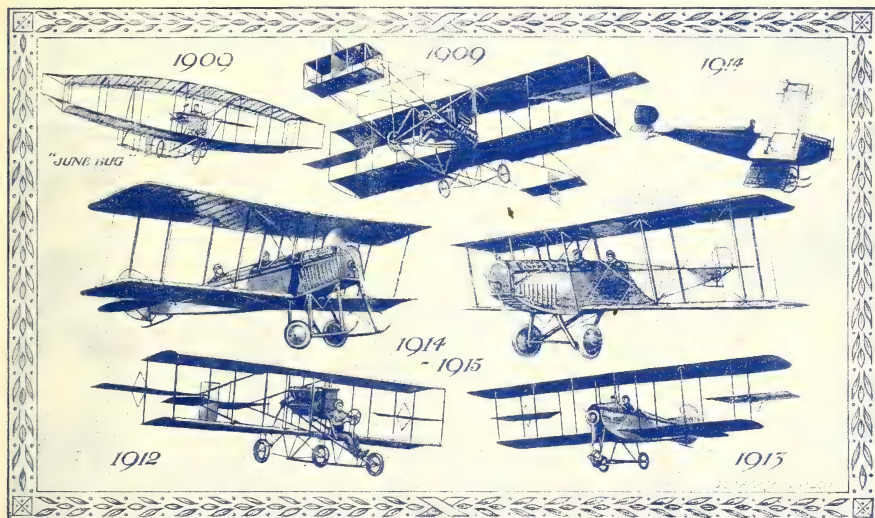
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ON THE BRITISH WORKMAN.

It is quite time someone got up and told the British workman the truth about himself and his misleaders. He has not, it seems, the slightest idea of the true position of this country—either the military or the financial position. If he had it is quite possible that he would alter his present attitude and really start in to work. The following incident illustrates to perfection the views of the British workman at present.

Some few days ago a friend of mine who runs an important aircraft factory was confronted by a deputation of his men who demanded bluntly an increase of wages. Incidentally, they have had their wages raised considerably since the outbreak of war, besides drawing a war bonus. In many cases, their wages are double what any of them have drawn in time of peace, and are considerably more than they are earning.

Knowing that every man in the place is capable of doing more work than he is doing, the manager said that he had no objection to paying them more if they would turn out more stuff, and suggested that they should go on piece-work, so that if a man was worth more money he would earn it automatically.

The ringleader of the malcontents promptly objected, saying: "Ah! But if we did that we should have two men doing the work of three." Thus admitting that they were deliberately limiting output. The manager pointed out that was precisely what he wanted, and what he was prepared to pay for. The Flying Services want more aeroplanes—he explained—just as the artillery need more ammunition, and the more they get the quicker they will end the war. Also, he added, if they deliberately limited their output they were helping the enemy to win the war instead of helping our troops to win. To this the ringleader replied: "Oh! That's all right. We don't need to hurry ourselves. We're bound to win in the end."

Now, there you have the British workman's attitude in a nutshell. He is limiting his output deliberately, because, very naturally, he wants all the money he can get for the smallest amount of trouble, and he firmly believes that we are bound to win the war, so there is no need for him to hurry himself.

CAN WE WIN?

Is there no one in the Government strong enough to come out and tell the Nation the truth? It is not a question of when we shall win the war, but of whether we can ever win it at all. Once get that into the workman's head and he will begin to see that the man who by deliberately refusing to work his best allows our armies to be beaten is a far worse enemy to the country than the soldiers who beat us.

If, owing to the slackness of the British workman, German troops land in this country because of shortage of guns and ammunition, or because there are not enough aircraft to spot the approach of the invading fleet, and if those German troops commit in English coast towns all the outrages they have committed in Belgium, I say that the workmen who slacked over the work on those guns and aircraft are greater criminals than the men who commit the outrages.

If British workmen, through their slackness, cause a shortage of aircraft capable of destroying airship sheds on the Continent, and a shortage of anti-aircraft guns and ammunition, and if, as a result, the fleet of Zeppelins, which Germany is now accumulating, comes over in about three or four months' time, and lays the major portion of the City of London flat, I say that the British workman is more to blame than the Zeppelin crews, who are at worst doing the job for which they are paid, and doing it a deal more efficiently than the British workman is doing his.

No doubt, the destruction of the City would not trouble the British workman much, because he does not live there; but he might feel peevish if, owing to dislocation of Bank business or Post Office work, he found there were no wages for him on Friday night. For this reason one cannot help feeling that when a Zeppelin drops bombs on a working-class suburb its visit is by no means an unmixed evil, in that it lets the workman see the horrors of war even better than his pet "Cinema" can show them.

When a workman hears that his pal Bill Smith and his kids have been blown to bits by a bomb, let him think to himself whether if he had worked a bit harder to finish a certain propeller, or a certain wing spar, he might not have hastened the delivery of an aeroplane which, if it had arrived in time might have cut off that Zeppelin over the North Sea before ever it reached England, or have destroyed it before it got home again, and so have avenged Bill and his kids.

It is too much to expect an Englishman to rise to the intellectual height of seeing that every stroke of the particular tool he happens to be using is a blow struck for the safety of his own skin and of those whom he holds dear—I put them in the order of their relative importance to the average workman—just as much as if he were handling a bayonet instead of a chisel. That, however, is how the matter appears to the more intelligent and quick-witted Frenchman—partly, perhaps, because the enemy is in his country, and because he has, in many cases, fought him personally.

FRENCH AND BRITISH WORKMEN.

A friend of mine who has just come back from France tells me that the enthusiasm of the French workman is astonishing and untiring. Every weapon, every cartridge, in fact, goes out of its maker's hands accompanied by a curse on the Boche and a prayer that it may kill one of the enemy. The workman puts his heart and soul into his work.

In the French aircraft industry it is just the same. Every aeroplane hand, as a machine leaves the shop, puts up a prayer—even Agnostics curse and pray instinctively, in moments of emotion, though your intelligent Frenchman rather prides himself in his calmer moments on being a Freethinker—that it may bring down a Boche, or drop bombs on a German town.

As an example of French natural skill and French enthusiasm combined, I wish to draw the attention of English workmen particularly to the difference in time spent in producing one specific component part of every

aeroplane in French and English factories. In the leading French factories this part is produced by one good man in nine hours, a moderate workman takes eleven hours, and an indifferent hand takes between twelve and thirteen hours. In an English factory the time taken over the same job varies between thirty and forty-five hours.

In one French factory a particular star-turn workman regularly turns out two of these parts per day, and frequently finds time to lend a hand to another man who has got a bit behindhand.

The Frenchmen work at a lower rate per hour than the English, but their work is every bit as good. They do not work any longer hours, but having the sense to work at piece-work rates they draw very much higher wages per week, simply because they put their whole energies into their jobs. Piece-work on aircraft is not to be recommended, but subject to rigid inspection, and if carried out by conscientious workmen, it is quite safe. And if patriotism alone will not make a man do his best piece-work may increase his output.

PERNICIOUS AGITATORS.

The British workman, thanks to lack of information, is left at the mercy of pernicious labour agitators. The result is, that he is not allowed to know the truth about the war, but he is allowed to be fed with lies by walking delegates who live in luxury and idleness on the contributions he hands over to the Trade Unions which the delegates so badly misrepresent.

Having worked at the bench myself, and having been swindled by conscienceless bosses, I am all in favour of Trade Unions, provided that those Unions are run by men with clean consciences, and clean hands. Most walking delegates' hands are clean only because they never do an honest day's work to dirty them. In the sense that the workman's money sticks to them more than it should, they are generally dirtier than those of a greaser in a loco shop.

In the particular cases I have in mind in the Aircraft Industry, the men's work is deliberately limited by the machinations of Trade Union officials. And if works managers throughout the Industry are not very careful they will find themselves and their works under the worst kind of Trade Union tyranny. I counsel them one and all to take steps at once to guard against it. To begin with, I recommend them to study the works of the late Mr. Winslow Taylor, and his chief disciple, Mr. Gantt, on shop management. They may therein find suggestions as to how to pay their men four times the wages they are now earning and yet make it pay them and their firms.

In any sensible country, or even in this country under a forcible Government, agitators would just disappear till after the War, detained "on remand" so that they could do no further harm. Here, however, these agitators are allowed to go about filling half-educated workmen with lies, and persuading them that the real war is not between England and Germany, but between Capital and Labour in this country.

I particularly draw the attention of my readers among the rank and file of the Royal Flying Corps to this point, because they are the men who have to work all night in the wet and cold to try and make good with the inadequate tools and materials which it is possible to carry in the Field, the shortage of spares and of new machines caused by such men. I deprecate personal violence, but a little straight talk from the men who have suffered might do a power of good to the misguided victims of walking delegates, and so forth.

THE GOVERNMENT'S SHARE OF BLAME.

The workman who slacks or "mikes," as it generally is called in the shops, is not the man primarily respon-

sible for the present trouble. He is really the victim. The blame should be divided between the Trade Unions and the people who withhold information.

When the personal head of a Government which has to govern a nation in the position in which the British Empire finds itself to-day can get up, as Mr. Asquith did on Tuesday of last week, and talk jauntily of the satisfactory position of everything except our financial state, one is staggered at his optimism.

When the head of a Government which has been and is responsible for the wholesale expenditure of men, money, and material, and the colossal deals on both sides of the Atlantic, can get up and preach economy to the individual member of the community, one is even more staggered than at his optimism.

Even in the days at the War Office of the lawyer-yeoman Seely, who in his statements on military aircraft held the Parliamentary record for optimism, never has anything been said which is more likely to confirm the British workman in his belief that there is no need for him to worry or to exert himself. Mr. Asquith said, in effect: "We're bound to win anyhow, so there is no need to worry, but," he added, "we want more money, so see that you don't spend too much on yourself."

TELL THE TRUTH.

If we are to win this war the workman must be told the truth. Is Sir Edward Carson strong enough to do it? He made a good start in the House on Tuesday, November 1st; will he do as much for the country at large?

Let him tell the workman the truth about the Dardanelles defeat—for the man or the Army or the nation which fails to reach a desired goal in reasonable time or at reasonable cost is defeated, even if a second effort succeeds. Let him tell what happened in British East Africa and what the Germans did with the troops we landed in German territory. The Germans know all about it, for it has all appeared in the neutral papers. Let him tell why the great victories at Neuve Chapelle and at Loos only won back a mile or two of territory, and let him explain why, when a German advance of similar or greater extent in the past has been similarly stopped it has been hailed by the English Press as a great British victory.

Let him explain why German aircraft over our lines in Flanders are beaten off by the bravery of our pilots and not by the superiority in quantity and quality of our aeroplanes or by the number and accuracy of our anti-aircraft guns. Let him explain why Zeppelins navigate unhurt over London while our guns bespatter our suburbs with shell-splinters, and why the enemy airships are not met by overwhelming gun-fire before ever they reach London.

Let him tell of the mess and muddle and delay in production caused by civilian meddling with aircraft output and design. Let him show the British workman clearly that not only in aircraft production but in every other direction it is not good enough for two men to do the work of three, but that if we are to avoid being beaten one man must do the work of two.

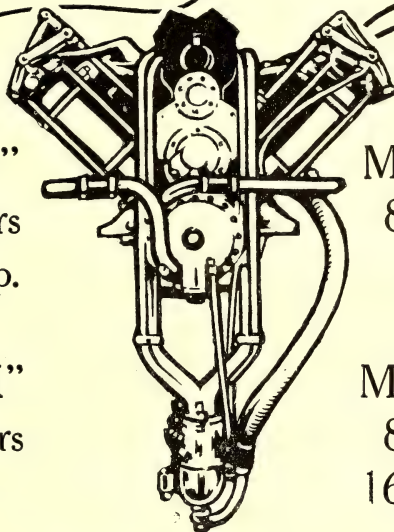
Women are doing more work than men, because in an emergency a woman talks less. In one shell factory of which I know, the shops "manned" by girls far exceed the output of the similar shops staffed by men. And the men have been trying to induce the girls to limit their output to the men's "Union" rate. One "delegate" on this job received a pretty slap in the face from a girl who retorted: "You git back to yer shop and git on with yer work. I can turn things over in me mind even if I 'aven't got trouser pockets."

There is a sight too much hands-in-pocket meditation in these days. If the Government would let the Press

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ERNEST B. H. LANDER, 1915.

tell the truth openly there would be less of it and far more work.

The real root of all the trouble is the class of man who now runs the country. With few exceptions, there is hardly a name which has helped to make English History in the past. There is hardly a name which has ever led the men who built up the British Empire to military or political victory. Which means that there are no born and bred leaders or legislators among them.

No one recognises a gentleman quicker than the English workman, and no one so heartily despises the imitation article. As Mr. Fielding Hall pointed out years ago—the genuine aristocracy which governed the country remained almost pure Norman, and the trading and working classes remained Saxon until the beginning of the nineteenth century. The Normans being born rulers and leaders built up the Empire. Then, in a period of peace and security—for Sedgemoor was the last battle fought on British soil—the Saxon traders waxed rich. The East India Company was formed, it was governed by Saxon shopkeepers, and—as Mr. Hall clearly shows—it brought about the Indian Mutiny. The Saxon Heptarchy—or Anarchy—had proved centuries earlier that the Saxon can neither construct nor govern, but when properly governed and led he can be made to do anything. Witness, for example, how the stolid English county regiments “stuck it” in the trenches last winter.

MR. KIPLING'S PROPHECIES AND PHILOSOPHY.

To-day we are governed by a plutocracy of Saxons, barring a few Jews, who may be good financiers and useful in that way, but the Jewish race has never produced a soldier since Judas Maccabeus. That Saxon plutocracy does not understand its own people. It would be well for it to study that wonderful little “School History of England,” by C. R. L. Fletcher and Rudyard Kipling.

Here is part of what they have to say on the Saxon people:—

“The Saxon Englishman was a savage with the vices and cruelties of an overgrown boy; a drunkard and a gambler and very stupid. But he was a truth teller, a brave, patient and cool-headed fellow. He never knew when he was beaten, and so he took a lot of beating. He was not quarrelsome by nature, and, indeed, when he had once settled down in Britain, he was much too apt, as his descendants are to-day, to neglect soldiering altogether.” Does not every word of that apply to the English workman of to-day?

Here is a curiously prophetic passage: “He forgot his noble trade of sailor which had brought him to Britain so completely that within two centuries his coasts were at the mercy of every sea-thief in Europe; and down the north-east wind the sea-thieves were always coming. England should always beware of the north-east wind. It blows he no good”—which in these days of Zeppelins and gas attacks is extraordinarily apt.

Further, the History says: “He hated being governed; he always stood up for his ‘rights,’ and often talked a lot of nonsense about them. In the sweat of his brow he ate the bread and pork and drank the beer (too much of the beer) which he raised on his land.”

Then the Norman came and hammered him into shape, put him under discipline, and made a man of the Saxon. But the Norman had to learn by many rebellions how to handle the Saxon raw material, and being a born ruler of men he learned in a few genera-

tions. Here is how Mr. Kipling sings the last injunction of a dying Norman Baron to his heir:—

“The Saxon is not like us Normans. His manners are not so polite,

“But he never means anything serious till he talks about ‘justice’ and ‘right.’

“When he stands like an ox in the furrow with his sullen set eyes on your own,

“And grumbles ‘This isn’t fair dealing,’ my son leave the Saxon alone.

“Appear with your wife and the children at their weddings and funerals and feasts;

“Be polite but not friendly to Bishops; be good to all poor parish Priests;

“Say ‘we,’ ‘us,’ and ‘ours,’ when you’re talking, instead of ‘you fellows,’ and ‘I.’

“Don’t ride over seeds; keep your temper; and never you tell ‘em a lie.”

There are other verses to the poem and there are many other poems in the book equally good, but in these two you have the secret of the British Norman gentleman’s hold over his people, and the secret of the failure of the Saxon or Hebrew *parvenu* when mere wealth or scheming has foisted him into the Norman’s position either as a country squire or as a ruler of the nation.

Incidentally, if some manufacturers who have trouble with their hands did a little more personal appearing at “weddings and funerals and feasts,” so to speak, they would find that most of their troubles would disappear. So many self-made men are afraid of losing caste by being familiar with their employees, and saying “we, us, and ours.” The Norman, being a gentleman, never had that fear, and that is why the Norman has always held his people together.

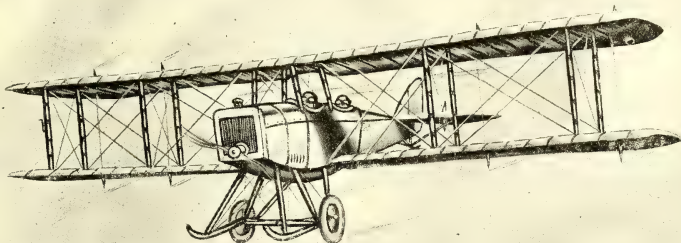
But the key to the whole of the present situation is in Mr. Kipling’s last phrase.

Tell the English working man the truth, the whole truth and nothing but the truth, and he will soon see what “justice and right” means in the present national peril. But very probably someone will have to pay for the lies which he has been told about victories which lead nowhere, and about the comfortable certainty of winning a war which we can quite possibly lose unless things are altered promptly. And that is why some people refuse to allow the truth to be written, though they cannot prevent it from being spoken.

THE WORST ISSUE.

The worst thing that could possibly happen to this country would be the sudden collapse of Germany. The officers and men of the Navy and Army would come back demanding the direst penalties from those at home who have betrayed their trust so often, and not a paper would give a paragraph to their case. Every inch of space would be wanted for fulsome eulogies of the authorities, naval, military and civilian, who had “saved the World from German Kultur”—of course forgetting that a few little countries like France and Russia and Italy had a hand in the job.

Then a lot of bleating Pacifists would get up and proclaim that Armageddon was over, the Kingdom of Christ was come upon Earth (*vide* prophecies), and all armaments could now be abolished. More money would be spent on pampering the workman, under the general heading of “Social Reform.” There would be no money for ships, aircraft, guns, or anything of a warlike nature. And then, when in ten or twenty years the next big war came we should go under without a kick—and serve us jolly well right.



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E.B.H. LANDER, 1915.

OUR BEST HOPE.

However, that triumphal entry into Berlin is very unlikely. If the Allies arrive at getting Alsace-Lorraine for France, Belgium for the Belgians, part of Galicia for Russia, and most of the German Colonies for England they will do very well indeed, and far better than England in particular deserves.

When peace breaks out and the arguing over the world's trade begins there will still be so much obvious danger of war in a few years' time that no one will dare to speak of Universal and Eternal Peace.

SCHOOL PUPILS.

BY ONE OF THEM.

"From information received" one learns that there are at present in this country quite a large number of people who are anxious, from one motive or another, to learn to fly. The following rather disjointed notes on the subject may therefore be not without some passing interest. They are mainly of interest to civilians only; officers, temporary or otherwise, of either Service, generally pass through one of the Service schools.

Their way of tuition is, therefore, already mapped out for them, and is, in consequence, more or less easy. The way of the civilian would-be pilot, on the other hand, has been rendered by a variety of circumstances rather like unto that of the transgressors of the Scriptures.

Before spending his tuition fee, the civilian should first of all acquaint himself with the situation that at present exists in this country with regard to flying schools. And that, in a sentence, is this—that our facilities for the training of pilots are somewhat inadequate. We have not enough aerodromes to contain the schools that would satisfy the demand; nor do we—I do not say "can we"—turn out enough school machines.

People who wish to fly may be divided into two classes, those who wish to do so in order to acquire commissions in the R.N.A.S. or the R.F.C., and the others. The latter will be doing some small service to the nation if they keep outside the aerodromes.

The time that the schools would otherwise devote to them will then be given to the training of future Service pilots, which means that those pilots will be sooner at the disposal of the nation at a time when they are really urgently needed.

Then we can begin to think seriously about building an air fleet—for this is the last war in which the Fleet at Sea is going to be any safeguard whatever against hostile projectiles. Even as it is, we shall be lucky if there is any London worth looking at in a year's time.

And the grim humour of the whole thing is that all the trouble arises from a pinchbeck "upper class" lying to the Saxon, and not knowing as much about the true Art of Government as any Norman noble knew nine centuries ago.—C. G. G.

Again, those wishing to join the Services should take the trouble to discover, before spending their money, whether the Services really want them. The possession of a ticket does not ensure the subsequent possession of a commission, as certain aged, halt, maimed, and socially impossible people know to their cost. It is not worth while to pay £75 or so before you know that your eyesight, say, is not up to R.N.A.S. or R.F.C. standard.

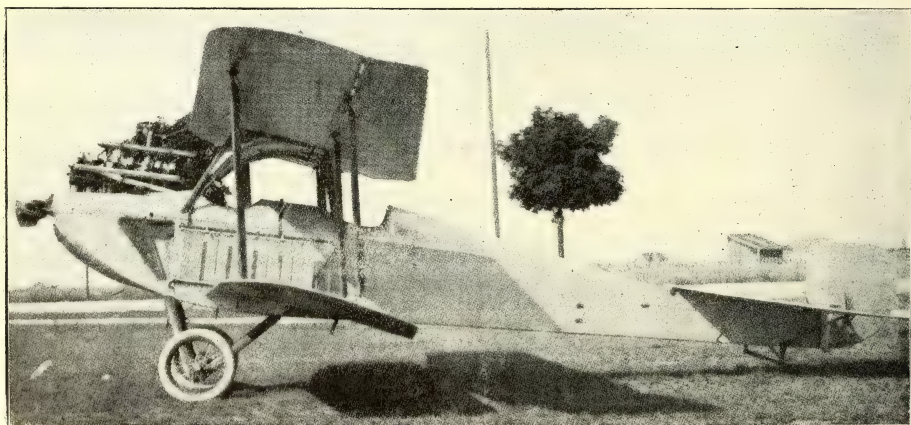
Having made tolerably certain by applying to the Director of Military Aeronautics at the War Office or the Director of Air Services at the Admiralty that one is suitable for one of the Services, the next step is the choice of a school. One may safely say that all the schools at present in existence are capable of turning out efficient pilots, and the choice of a school is therefore mainly a matter for personal judgment and preference.

In choosing, one should see that the favoured establishment is not already unduly overcrowded, and that it can repair damaged machines within reasonable time.

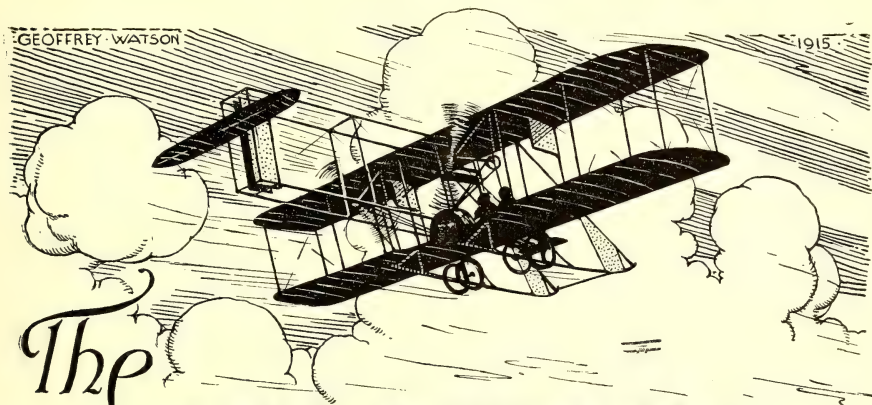
Contrary to a popular tradition, I personally believe that pusher tickets are held in greater esteem in at least one Service than are those taken on tractors, and it may be added that ability to fly a seaplane is not insisted upon in candidates for the R.N.A.S.

£75 is the usual fee for learning to fly, and I have yet to learn that an increased fee provides any very superior tuition. [That, also, depends on personal judgment.—Ed.]

Having signed his agreement form, the first thing that a new pupil usually does is to buy himself a complete and very marvellous equipment of flying kit. Most of it is quite unnecessary. One should possess a really warm pair of leather gloves or gauntlets, not of the most expensive kind, because they are certain to be lost.



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Something special in the way of headgear is a distinct convenience, and looks better than an ordinary cap turned the wrong way round. Goggles are a matter of personal taste, but they certainly save one's eyes. They should be made of Triplex glass or mica; ordinary glass is unsafe, and should not be allowed in any school. Any old scarf and a sweater will keep one warm enough for school flying, and the rest of one's clothes should also be of the "any old" variety, that are incapable of being spoiled by frequent doses of castor-oil.

Finally, do not parade in full kit throughout all the civilised and flapper-containing districts in the vicinity of the aerodrome. It is not done.

While one is learning to fly, one should endeavour to learn. In other words, one should turn up at the aerodrome whenever there is the slightest off-chance of practice. There are plenty of really windy days on which to go to town. Further, it is possible to fly without knowing anything at all about one's engine or the machine that it propels. But complete ignorance of these matters is not an asset in the Services.

Over-confidence in one's own ability is not advisable at a flying school, but, then, neither is under-confidence. One must not be too much afraid of a smash. One is not likely to get hurt, and the school can afford it.

Lastly, having staggered round your eights, and having done a *vol plané* from a doubtful height, and therefore being in possession of a ticket, do not imagine that you know anything about flying. Later, at a Service school, you may begin to learn.

A FINE FLYING EVENING—JULY, 1915.

A REMINISCENCE.

The clock gives out the official bungalow-time as six.

The evening is deliciously mellow. We have purloined a line of cushions, and sit on the edge of the shingle-slope, waiting events. Below us, the partly dried-up lagoon lies pleasantly green and drab, with patches of scarlet. The outlines of — College (deleted by indigenous Censor.—Ed.) stand up dark and dominating on the far horizon of the downs. Behind us the sea tumbles with the swell of yesterday's storm.

An elusive, shadowy something creeps up against the slopes towards — (Another deletion.—Ed.)

"There goes the first," says the artist on the cushion to my left, dropping the yellow sea-poppies into her lap.

We follow her glance. The light shape blackens against the blue as it clears the hills and hums towards us.

"Maurice longhorn," says the man with the field-glasses, proud of his technical lore. (If he had not been so polite, he might have said "mechanical cow."—Ed.)

Another insect shape is gliding along the hills now, and glances suddenly white as its planes dip in a passing gust.

"Two—three—and a fourth!"

Pleasantly hypnotised, lazily content, we watch them rise, wheel round, and soar away.

With military precision they are rising now from behind the line of sheds below the grey huts of the tin town perched on the higher downs. With a roar a big Maurice turns over our heads and speeds away towards the flats where the old town, with its rich tones and splashes of colour, lies quaint and mediæval beyond the soaring arches of the much-triend suspension bridge.

"Five—no—six!"

"There were eight last time!"

"What an anachronism that 'bus looks!" ventures the philosopher of our party as the one "Henry" of the swarm dips over the softened lines of the town.

"There are others about!" murmurs the artist, and picks up her poppies.

I catch her brown eyes in sympathy. The previous day, by dint of tireless effort, we had prevailed on the

powers that be to leave us in peace as we made innocent sketches of the bridge and — Old Church (You really must be more careful about names, or I shall let one slip through, and then what will the confiscatory judge say?—Ed.) from the bank which slides down to the gull-pastures from the path to the aerodrome. We retained a certain soreness from the struggle. On our return we had noted a couple of nondescripts couched with a camera, taking wicked snaps of the objects which had cost us so much mental toil and moral suasion.

"Eight—nine!"

"Flights A and B—longhorns and shorthorns," bubbles over the superior knowledge of our expert.

"Buz-z-z"—gloriously steady, the wide-spread planes sweep close above our heads and out over the shore.

"Coo-ee-ee!" yells our irrepressible, and we fancy we detect a sympathetic movement in the bluish-grey nacelle.

"What would — (Oh, do be careful!—Ed.) be without its giant birds?" remarks our philosopher, with subdued brilliance. "Figure to yourselves the vacant sky, the silent air. . . ."

"Vacancy and silence have charms sometimes," I remark. "We get enough H. G. Wells. I can't figure more than five now."

We watch again.

They are dropping home one by one, much like homing wasps in the fruit-time. Aloft one straggler is passing at a great height into the first colours of the sunset in the direction of —. (Nearly let one through that time.—Ed.) The familiar hum pulsates irregularly.

A diversion from the bungalow.

"Supper!" cries our hostess, framed in the doorway.

"The bell has gone five minutes ago."

We rise by one and two and seize our cushions. A distant Maurice turns suddenly down, and we pause to watch it swallowed up behind the sheds.

"Glorious evening for flying!" summarises our expert. "Couldn't we get a joy-ride?"

We are impressed with the aspiration and turn our thoughts to supper.—H. F. S. S.

(Of course, if you really want the names, buy a map and read the Royal Aero Club's official list of pilots and where they take their certificates.—Ed.)

TO THE B.E.2c.

A prominent firm of motor-car builders who are constructing B.E.2cs to the Royal Aircraft Factory designs, recently announced in certain of their advertisements: "We are busy building biplanes for the British Air Brigade." Our mad poet has found inspiration in this epigrammatic effusion, and has added eighteen lines entirely on his own responsibility:—

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And draughtsmen burn the midnight oil

In putting snags to rights.

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We are busy building biplanes

For the British Air Brigade;

They will bless us with great vigour

When they use them on a raid!

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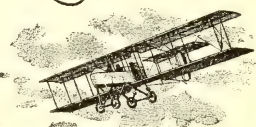
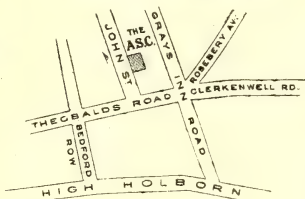
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Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," November 2nd, 1915.

ADMIRALTY, October 30th.

ROYAL NAVAL AIR SERVICE.—Paymaster H. A. Michell, R.N., to be flight com. May 7th.

WAR OFFICE, November 2nd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—October 12th: Temp. Lieut. C. M. Leman, R.G.A., T.F.; Temp. Sec. Lieut. R. Barton (R. Lancs.), and transd. to Gen. List; Sec. Lieut. M. Le Blanc-Smith, S.R.; Sec. Lieut. E. L. Millar, S.R.

* * *

From the "London Gazette" Supplement, Nov. 3rd, 1915.

WAR OFFICE, November 3rd.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers. October 14th: Capt. W. B. Crossley, Lancs. F., T.F.; Temp. Lieut. G. H. A. Hawkins, Manch., T.F.; Sec. Lieut. P. A. Steenkamp, 1st Dgn. Guards, and seconded; Sec. Lieut. W. P. Cort, S.R.; Sec. Lieut. M. Minter, S. Res.; Sec. Lieut. S. E. Cowan, S.R. October 19th: Temp. Sec. Lieut. R. Raymond-Barker, Northd. F., and transd. to Gen. List; Sec. Lieut. H. Tomlinson, S.R.; Sec. Lieut. H. H. Bright, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: W. P. Cort, M. Minter.

G. A. Crane to be sec. lieut. (on prob.) October 15th.

* * *

From the "London Gazette" Supplement, Nov. 4th, 1915.

WAR OFFICE, November 4th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—October 23rd: Lieut. T. W. P. L. Chaloner, Yorks., T.F., from an asst. eqmt. officer; Temp. Sec. Lieut. C. H. Elliott-Smith, Beds., and transd. to Gen. List; Sec. Lieut. A. C. Watt, Gordon H., and seconded.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. Lord H. R. H. Gascoigne-Cecil to be lieut. October 15th.

Sec. lieuts. (on prob.) confirmed in rank: E. A. Richards, R. Groves.

* * *

A Supplement to the "London Gazette" issued on November 4th contains the following honours for R.F.C. officers:—

DISTINGUISHED SERVICE ORDER.

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned officers to be Companions of the Distinguished Service Order, in recognition of their gallantry and devotion to duty in the Field:—

Lieutenant (temporary Captain) GEORGE AUBREY KENNEDY LAWRENCE, Royal Artillery and Royal Flying Corps.

For conspicuous and repeated acts of gallantry in France, notably the following:—On September 21st, 1915, he completed a reconnaissance to points 60 miles inside the German lines, although repeatedly attacked by a hostile machine. On September 25th he attacked and hit a moving train near Lille, descending to 600 feet. On September 26th he attacked and drove off a hostile aeroplane which was interfering with our bombing machines. On September 30th he carried out a 3-hour reconnaissance in very bad weather. Although his machine was hit in 70 places by anti-aircraft guns on crossing the German lines on his way out, he carried on and completed his work.

Lieutenant (temporary Captain) GUY LINDSAY CRUIKSHANK, the Gordon Highlanders and Royal Flying Corps.

For conspicuous gallantry in France on September 29th, 1915, when he successfully carried out a special mission involving very great risk.

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned officers in recognition of their gallantry and devotion to duty in the Field:—

Lieutenant (temporary Captain) CUTHBERT EUAN CHARLES RABAGLIATI, the King's Own (Yorkshire Light Infantry) and Royal Flying Corps.

Temporary Second Lieutenant AWDRY MORRIS VAUCOUR, Royal Field Artillery and Royal Flying Corps.

For conspicuous gallantry and skill on September 28th, 1915, when they carried out a reconnaissance over Valenciennes and Douai. They had to fly in thick cloud for nearly the whole distance, and several times their aeroplane got into a "spin." The pilot, however, succeeded each time in righting his machine, and they reached their objective and carried out the reconnaissance at 2,800 feet under very heavy fire.

[It may be well to draw the attention of R.F.C. officers to the fact that unless one runs into pitch darkness it is always possible to avoid spinning or side-slipping in fog or cloud by the old simple indicator used by many naval officers, namely, an ordinary piece of string streaming out behind a piece of wire exactly in front of the pilot's eyes.—Ed.]

* * *

From the "London Gazette," Nov. 5th, 1915.

ADMIRALTY, November 1st.

ROYAL NAVAL AIR SERVICE.—Lieut. A. J. O'Reilly, R.N.V.R., granted temp. comm. as flight sub-lieut. September 15th.

WAR OFFICE, November 5th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Coms. October 19th: Maj. T. C. R. Higgins, R. Lanc.; Maj. B. F. Vernon Harcourt, Welsh; Lieut. E. J. Bannatyne, 10th Hrs., and to be temp. capt. whilst so employed.

Wing Adj.—Temp. Sec. Lieut. J. B. Solomon, Ox. and Bucks. L.I., and to be temp. capt. whilst so employed, vice Capt. Lord R. E. Innes-Ker, I. Guards, S.R. October 15th.

Flying Officers. October 18th: Capt. H. F. A. Gordon, York, and Lanc., and seconded; Lieut. A. P. Dickie, Royal H., T.F.; Temp. Lieut. W. H. Primrose, A. and S.H., T.F.; Lieut. C. H. Dixon, York. L.I., S.R., and seconded; Lieut. R. Blatherwick, R. Scots F., S.R., and seconded; Sec. Lieut. F. D. Lord Doune, Scot. H. Yeo.; Temp. Sec. Lieut. D. Tweedie-Smith, Middx., and transd. to Gen. List; Temp. Sec. Lieut. G. Wigglesworth, A.S.C. and transd. to Gen. List; Temp. Sec. Lieut. R. P. Turner, Gen. List. Temp. Lieut. G. A. Barney, Scot. H. Yeo. October 19th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Date of appt. of Sec. Lieut. (on prob.) S. Ransom September 24th, not as stated in "Gazette" of October 16th. To be sec. lieuts. (on prob.), October 16th: W. Green, T. G. Clarkson. M. C. Evans. November 1st.

* * *

From the "London Gazette" Supplement, November 6th, 1915.

WAR OFFICE, November 6th.

REGULAR FORCES.—ESTABLISHMENTS.—INFANTRY (LINCOLNSHIRE REGT.).—Flight Sergt. F. C. V. Laws, Royal Flying Corps, to be sec. lieut., and seconded for service with Royal Flying Corps. November 7th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—R. K. Shives to be sec. lieut. (on prob.). October 5th.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The "London Gazette" Supplement, published on November 6th, states that the President of the French Republic has been pleased to confer the decoration of the Legion of Honour on the undermentioned officers, with the approval of his Majesty the King, for distinguished service in the field :—

CROIX DE COMMANDEUR.

Major-General Sir David Henderson, K.C.B., D.S.O.

CROIX DE CHEVALIER.

Lieut. (temp. Capt.) James Valentine, Royal Flying Corps (Special Reserve).

[It may appear somewhat peculiar that no mention is made of one or two R.N.A.S. officers who have been engaged on Anglo-French operations in Paris similar to those of the latter officer.—Ed.]

* * *

From the "London Gazette" Supplement, Nov. 8th, 1915.

WAR OFFICE, November 8th.

REGULAR FORCES.—Warrant and N.C.O.'s to be sec. lieuts. for service in the Field :—

INFANTRY.—SOMERSET LIGHT INFANTRY.—October 8th. Sergt.-Maj. H. R. Vagg, Sergt.-Maj. T. Bullen, Sergt.-Maj. R. S. Rumbold. (All from Royal Flying Corps and seconded for duty with Royal Flying Corps.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Coms.—Capt. S. Hutcheson, 3rd Brahmans, Indian Army, from flying officer. November 5th. Maj. R. E. T. Hogg, C.I.E., 38th K.G.O. Central India Horse, Indian Army. November 6th.

NAVAL.

The following appointments were notified at the Admiralty on November 2nd :—

ROYAL NAVAL AIR SERVICE.—The following have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., all to date November 1st : M. H. P. Allen, S. M. Harding, and W. Hallett-Carpenter.

Temp. Sub-Lieut., R.N.V.R., H. C. Woodward, to the "President," additional, for R.N.A.S., to date November 1st.

Mr. G. M. Kingsmill entered as proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 1st.

* * *

The following appointment was notified at the Admiralty on November 3rd :—

ROYAL NAVAL AIR SERVICE.—Temp. Flight Sub-Lieut. A. J. O'Reilly, to the "President," additional, for R.N.A.S., to date September 15th.

* * *

The following appointments were notified at the Admiralty on November 6th :—

ROYAL NAVAL AIR SERVICE : Petty Officer O. C. Williams granted a temp. commission as lieut., with seniority. November 5th.

Mr. A. M. Hughes, entered as proby. flight sub-lieut. for temp. service and appointed to the "President," additional, for R.N.A.S., to date November 7th.

* * *

The following appointment was notified on November 8th :—

ROYAL NAVAL AIR SERVICE.—Mr. G. W. Halse granted a temp. commission as lieut., R.N.V.R., and appointed to the "President II," for inspectional duties, to date November 5th.

* * *

The following appeared on November 5th :—

IN MEMORIAM.

BEEVOR.—In memory of our beloved "Frankie," Flight Lieut. Royal Naval Air Service and 18th (Queen Mary's Own) Hussars (Special Reserve), who, with his observer, was shot down by the Germans when flying near Ostend on November 5th, 1914. He gave his life

to his King and Country and was quite prepared to do so. Age 22 years and 3 months. A Mass will be said by his friend, the Rev. Lieut. O'Caffrey, R.N.A.S.

[Flight-Lieut. Frank Beavor disappeared after leaving Eastchurch on a Bristol biplane, with Lord Annesley as passenger. It was rumoured that they were shot down near Ostend, but apparently no definite proof of their death has ever been received. Lieut. Beavor, besides being a fine pilot and a very brave young officer, was a first-class sportsman, and he is still deeply missed by his brother officers.—Ed.]

* * *

The "Morning Post" announces that Lady Edward Grosvenor gave birth to a daughter on Saturday last at Robin Hood Farm, Kingston Vale, Putney.—Congratulations.

MILITARY.

The following passage in the telegraphic dispatch from Field-Marshal Sir John French, dated General Headquarters, November 5th, 8.22 p.m., deals with aircraft :—

Yesterday five air fights took place, resulting in a German aeroplane being brought down in their lines.

Since November 1st the weather has been very wet.

* * *

The following appeared in the casualty list published on November 3rd :—

CORRECTION : ACCIDENTALLY KILLED.

Tallentine, Sec. Lieut. A. T. 28th London (T.F.) (Artists' Rifles), att'd. Royal Flying Corps, should read Tallittre, Sec. Lieut. A. T.

* * *

The following casualties in the Expeditionary Force were reported on November 4th, without date :—

WOUNDED.

Greer, Lieut. S. T. L., R.F.A., 6th London Brigade (T.F.), and Royal Flying Corps.

Hullam, Sec. Lieut. W. A. W., A.S.C., att'd. Royal Flying Corps.

Williams, Sec. Lieut. J. L., Royal Flying Corps.

MISSING.

Darley, Capt. C. C., R.F.A. and Royal Flying Corps.

Gamble, Sec. Lieut. H., 5th S. Lancashire (T.F.).

Lawrence, Sec. Lieut. W. G., 3rd Oxfordshire and Bucks L.I., att'd. Royal Flying Corps.

Marks, Capt. C. H., Royal Flying Corps.

Slade, Sec. Lieut. R. J., Army Cyclist Corps, att'd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on November 5th, without date :—

MISSING.

Collier, Sec. Lieut. A. C., 9th King's Own (R. Lancasters) and Royal Flying Corps.

Previously reported Missing, now reported Killed.

Caws, Lieut. S. W., Royal Flying Corps.

Previously reported Missing, now reported Prisoners of War.

Greenhow, Sec. Lieut. M. W., W. Yorkshire Regt. and Royal Flying Corps.

Mulcahy-Morgan, Capt. T. W., R. Irish Fusiliers and Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on November 6th, without date :—

MISSING.

Wilkin, Sec. Lieut. B., Duke of Cornwall's L.I., att'd. Royal Flying Corps.

* * *

The casualty list published November 6th also contains the following :—

WOUNDED.

R.F.C.—Courtney, 2891, Sergt. F.; Thornton, 364, Sergt. G.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The following appeared in the casualty list published on November 8th:—

Previously reported Missing, now reported Prisoner of War.

Sec. Lieut. H. B. Stubbs, Royal Flying Corps.

* * *

The casualty list published November 9th contains the following:—

Previously reported Missing, now reported Killed.

James, Capt. B. T., R.E., attd. Royal Flying Corps.

* * *

It may be noted that of late no dates are attached to casualties. This is doubtless done so that the Germans may not estimate our losses in any particular victory the Press Bureau claims. Nevertheless, it seems foolish to omit the dates from those posted as missing, for the Germans know perfectly well when they captured them. In the case of the R.F.C. it is doubly irritating, for, though the near relatives of officers are warned at once of an officer's absence, the omission of a date prevents an officer's friends from referring to the German communiqué of the same date to find out whether he is a prisoner or not.

* * *

The following appeared in the deaths columns on November 4th:—

MARKS.—Killed in action in an aerial fight in France on October 23rd, Captain Cecil H. Marks, 13th Squadron Royal Flying Corps, dearly-loved son of the late Major Claude Marks, D.S.O., and Mrs. Claude Marks, Carrington Court, Mayfair.

Cecil Hoffnag Marks was born in London on December 3rd, 1887, and took his certificate, No. 83, on a Farman biplane at Brooklands, at the Hewlett-Blondeau School, which in its short existence supplied some of the finest pilots this country has seen. The certificate was passed on May 9th, 1911.

He was educated at Eton and Sandhurst and joined the Middlesex Regt., going on to the Reserve of Officers on January 20th, 1912, and was appointed to the R.F.C. Reserve on April 17th, 1913. He went to Flanders in October, 1914, and saw much service there. After a spell of work at home he returned to the front, only a fortnight before his death, in command of a squadron.

Of Cecil Marks it may be said that those who knew him best loved him best. His unflinching good nature, his quick wit, his keen sense of humour, and his knowledge of literature and art made him a charming companion at all times, and accounted for his personal popularity with people of widely differing tastes. In addition he possessed considerable ability in mechanical and scientific directions and did much really valuable work in connection with "wireless."

For all his superficial brightness he was a man who considered the deeper things of life, and for his age he was an unusually profound thinker. Withal he was a keen soldier who knew and loved his work, and he was a truly brave man in that his sensitive and imaginative mind knew the dangers into which his duties brought him, and though that knowledge entailed knowing fear at its worst, his high sense of duty and his own strong will enabled him to do his work without shirking.

In Cecil Marks the Flying Corps has lost an officer who had already done valuable work and who held promise of being more valuable still, and many of those concerned with aviation have lost a very dear friend.

* * *

The following appeared on November 6th:—

A marriage is arranged, and will shortly take place, very quietly, between Captain John Upton Kelly, Wiltshire Regiment, attached Royal Flying Corps, only son of Mr. and Mrs. Richard Kelly, Summerhill, Enniskerry, County Wicklow, and Eileen Miriam, daughter of the late Henry Adams, Cannon Hill, Bray, Berkshire, and Mrs. Henry Adams, Stinchcombe Manor, Dursley, Gloucestershire.

Mr. H. Prevost Battersby, the most able of the correspondents at present in France, writing in the "Morning Post" says:—

"Aeroplaning is not, just at present, for the German an any too confident business. He lives in live fear of finding a British 'plane above him, and to avoid that he has to rise from the earth at a most uncomfortable hour so that the dawn may greet him at least ten thousand feet above the sea. From that altitude he sees what he can, and, should he catch sight of an enemy airman, he can plane back, with good chances, behind his own lines. Not a proud rôle, certainly; but better than littering the enemy's gun pits with a mass of wings and engine, to say nothing of himself."

[This paragraph is worthy of note, and the causes of this system of operation will be dealt with more fully at a later date.—Ed.]

* * *

The "Times" reproduces the following from a letter from a soldier writing from hospital, who says:—

"The morning of September 25th was very misty in the Armentières salient, and it was necessary for our airmen to fly low in order to make any observations. At about 9 o'clock one of our airplanes [It seems more likely that the soldier wrote 'aeroplanes.'—Ed.] came over Headquarters flying lower and lower, and with extraordinary skill descended in a neighbouring small field. Obviously something was amiss, as the firing-line—a mile and a half away—was too near for an airplane [See remark above.—Ed.] to rest. Immediately Major-General Wing (since killed) sent a trooper from the King Edward's Horse to see what was the matter. The flying officer was wounded by a bullet in the right shoulder, but he told the trooper his trouble—was in fact telling him, when each recognised the other as both having served together in the K.E.H. By this time, Colonel — of the R.A.M.C. had come up and was making preparations for dressing the wound, when his patient said he must make his report first. 'Let me write it for you,' suggested someone. 'No,' was the reply, 'I must write it myself.' With the left hand he wrote his report, directed its destination, and thereupon fainted."

* * *

An officer writing home from Gallipoli, says:—

"The German (or Turkish) aircraft have been quite busy lately. They seem to have some slow biplanes. One was over the other day, but soon shifted, as we did some d—d good shooting against it, bursting shrapnel all round, but unfortunately didn't bring it down. Our aeroplanes are up over their lines every day, but their anti-aircraft people can't shoot for little apples. You hear a shrapnel burst in the air, look up, and discover the aeroplane they are firing at is at least 500 yards away. I've never yet seen them go anywhere near one of ours. We had two biplanes marked thus (Iron Cross.—Ed.) over the other morning, but when a small monoplane marked thus (Allied Circles.—Ed.) appeared, going twice their pace, they scooted, with the mono. in pursuit, and disappeared in the clouds, much to everyone's disappointment, as we were all hoping to see a scrap."

* * *

An extract from a soldier's advice to his mother, which was published recently in the "Star," ought to be inwardly digested by many people in this country:—

"I received your letter giving an account of how you were scared by the last air raid. But do not let such things unduly disturb you—they do not, of course, and to your comfort—but believe me, it is possible they may be blessings in disguise. Many people hardly know there is a war, and these things are useful reminders.

"Besides, a Zepp. does not roam the country in an endeavour to find and drop bombs on your particular house. There are others, and though it is sad that many are killed and injured by these 'terrors of the air,' the law of chances provides that it is only one chance in

many thousands of a bomb dropping on any particular individual.

"Do not let these things disturb you—and so defeat the ends of the enemy."

* * *

The following from the "Globe" of November 4th is worthy of note :—

[We have had placed in our possession the letter we publish below. It was written by a Field Officer with the Air Service, and was sent open to the Press Censor at General Headquarters at the front. The immediate result was that it cost him his commission in the Flying Corps. Yet anyone who reads it will realise that no man, knowing what he did, dared keep silent in the face of a grave public danger. It will be seen how prophetic were his warnings, and now, if the letter had been published five months ago, the authorities and the public might have realised in time the impending danger.]

To the Editor of the "Globe."

May 25th, 1915.

Sir,—Whatever is thought in England, it has become apparent to those of us connected with flying here that the Zeppelin raids on England have up to now been merely to make our anti-aircraft guns give away their positions, and nothing up to now has been meant in the way of serious bomb-dropping. We know perfectly well that when, by dint of these trial trips, the enemy has discovered our weak spots he will get down to business and make his big raid with incendiary and asphyxiating gas-bombs (probably liquid chloride).

What we out here ask ourselves is: Have the authorities in London prepared for these eventualities? Are, for instance, the large force of special constables being instructed in effectually helping the London Fire Brigade, who will find themselves called to 100 different places that night? Are all special constables and firemen being provided with respirators to withstand gas? Is there any organisation at all to cope with a raid from the air on a big scale regarding fire and gas? (Explosions are a minor detail.)

We must not rely too much on our anti-aircraft guns, for they have had no practice at shooting at a sky target. Why have not some of the gunners been sent out here to practise where targets occur every day? We, whose nearest and dearest are in London, would like to have some assurance on those points. Have proper precautions been taken (if they have the papers have been strangely silent), or are we going to attempt to muddle through as usual?—Yours,

COMMON SENSE.

[Barring the point about gas bombs the letter is a very good prophetic effort, and just why it should have brought

punishment on its author is rather hard to see, except on the grounds that it was sent through the Censor only and so was not surrounded by sufficient red-tape in the way of submission to senior officers and War Office departments. Certainly its publication in May would have been useful.—Ed.]

FRANCE.

The communiqué of November 5th says :—

In Alsace one of our air squadrons flew over Dornach and bombarded the works used by the Germans for the manufacture of asphyxiating gases.

* * *

The communiqué of November 7th says :—

Enemy aeroplanes dropped eight bombs in the Dunkirk district; a child was injured. The material damage was unimportant.

* * *

It was reported from Paris on November 5th that an accident occurred on November 4th near le Bourget, where the Escadrille de Paris is located. Two biplanes over the countryside collided. The two machines burst into flame. The two pilots and the two observers were killed.

* * *

Another report of November 5th says that at Bron aerodrome, near Lyons, a biplane, which was being tested, fell. Both occupants were killed.

* * *

The following extract from Mr. H. Warner Allen's article, which appeared in various papers, is worthy of note :—

An excellent illustration of the work done by the sausage balloon is given in an article by M. Georges Prade, recently published in the "Journal." The Germans had brought up a big 15-inch naval gun, and tried one day to bombard an open town right behind the lines. The first of its big shells was heard roaring overhead by an observer in a captive balloon. For a long time he could see nothing suspicious; then suddenly it struck him that there was something unfamiliar about a clump of small fir trees on the crest of a distant hill. He could observe nothing remarkable about them, however, except that they were growing very close together and seemed to have suffered less than any of the woods near, which had been torn to pieces by shell-fire.

He was convinced that that clump of trees had no right to be there. If the trees had suddenly grown up in the night it could only be that the Bosches had planted them there, and they could only have planted them there to conceal something. A word down the telephone, and six-inch shells began to fall into that clump of trees with unfailing accuracy and regularity. The big German gun



The Aerodrome of the Australian Flying Corps at Point Cook, Werribee, Victoria.

spoke once again, and then it was silent. It has been silent ever since.

The unquestionable superiority of the Allied aviators has made the Germans very dependent on their captive balloons for long-range firing, and the French are now making great efforts to blind the enemy's big guns. Several methods have been devised to attack the "saucisse," but the most successful is the "avion-canon," the aeroplane with a small gun, firing an incendiary percussion shell. If a single one of these shells gets home, the whole balloon bursts into flames.

Quite recently several German "Drachen" have been brought down, and there is every reason to hope that these successes will be followed up. The Germans are already more cautious in sending up their balloons.

GERMANY.

The communiqué of November 3rd says:—

East of Peronne an English aeroplane was forced to land by the fire of our infantry. The pilot and an observing officer were captured.

* * *

The communiqué of November 8th says:—

To the west of Douai, Lieut. Immelmann shot down his sixth enemy aeroplane, an English Bristol biplane fitted with three machine-guns.

[A British aeroplane with three machine-guns may appear to be a novelty in this country. Apparently the Germans now know more about our latest types than British manufacturers are permitted to know.—Ed.]

* * *

Wolff's Bureau, the German Government's Press Agency, circulates the following telegram, which has been widely published in the German Press and also in the newspapers of neutral countries:—

"We hear from the Western front that the British, French, and Belgians have recently attempted to interrupt or to render impossible movements of our troops behind the German lines by sending aeroplanes on raiding expeditions. The Allies' aeroplanes land behind the German lines, and from them emerge soldiers in civilian clothing, who, armed with explosives, seek to destroy our railways and other means of transport. A large number of British and French raiders were sent through Holland into Belgium for the same purpose. But this enterprise was frustrated by the vigilance of our troops and our authorities."

[Some papers scoff at this story, and one labels it "made in Germany," though one fails to see why, because if true it is witness to the daring and bravery of the Allies' aviators and their passengers. One fancies, however, that on such work the passengers would wear uniform in most cases to avoid being shot as spies if captured, and would depend on quickness of action to get their work done before being caught.—Ed.]

ITALY.

The communiqué of November 3rd says:—

Notwithstanding adverse atmospheric conditions, the raids of our aviators continue. Escaping the fire of numerous anti-aircraft guns, they effectively bombard the many camps, trenches, and railway stations.

* * *

The communiqué of November 5th says:—

On the night of the 2nd, during a storm, one of our dirigible balloons bombarded enemy encampments in the Gorizia Plain. The airship was discovered by the light of star-shells and searchlights, and was the object of uninterrupted artillery fire, but returned safely.

* * *

It has been stated in print that Italian fliers recently and again bombed Trieste. Sensible folk will be glad

to know that this is not so. The Trieste area was in effect visited on 24th inst., and places by name, Muggia and Pirano, where war work is being done and which lie anything from 5 to 10 miles from the city, were punished by seaplanes in Italy's service.

Now that the dust is settling down and the pondered words of the Government's art-critics replace the frightful squealing of local reporters, one learns how the Scalzi Church dome actually was ruined. The bomb passed through roof, a grating, and the ceiling, which the painting ornamented, cleanly, afterwards falling 60 ft. on to the marble-paved floor where finally it exploded. The subsequent concussion of the air, enclosed as it was in a species of cylinder, acted on the "piston head" of the ceiling and forced it skywards.

The passing of Chev. L. Mina, Capt. R.E. and a distinguished technical writer on things concerning aerial navigation, appears in the Turin press. He "fell heroically at the front for the greatness of Italy" on 26th ult. Capt. Mina did a great deal of spherical balloon work at one time, and in 1909 beat the Italian height record (9,240 metres) with the well-known "Albatros" spherical.

The following, probably a happy invention, is going around about King Victor Emanuel, who is, of course, honorary something in a good many foreign armies. In one French regiment, at roll call, the King's name, *sans titres*, was sung out recently, and, as usual, one appointed to do so, replied: "Doing his work at home," when a very raw recruit was heard to mumble "another — slacker."—T. S. H.

* * *

An Italian correspondent of the "Temps" records an amusing interview with the Italian poet Gabriele d'Annunzio, who has been advertising himself on government aircraft in a manner similar to that practised before the war by a certain Brigadier General (T.F.), then a Lieut.-Colonel, in this country. The poet described the thrilling experiences of his flight above Trieste on August 7th last. D'Annunzio, by the way, still has the bullet which grazed his elbow and lodged in the fuselage of the seaplane that day. It is now mounted on a circle of gold, bearing the inscription: "Trieste, 7 agosto, 1915."

"It was on the return journey," said the poet, "that I experienced the real emotion. We had taken with us eight bombs to drop on the warships and the forts. The first seven fell where we wished. But when it came to the eighth bomb the mechanism went wrong and the bomb stuck, half protruding, but defying our utmost efforts to release it. On the other hand it might at any moment drop by itself."

"The position was critical. The Austrian seaplanes were in pursuit and it was time for us to return to Venice. At any sudden jerk of our machine the bomb might explode, to our utter destruction. But soon there were still graver dangers. We were now nearing Venice at full speed and a double peril threatened: either the bomb might explode just as the seaplane struck the water, dealing death and destruction in the dock, or it might drop just as we were passing over the roofs of the city. This idea haunted and tortured me. Imagine me, the lover of Venice, the passionate poet of Venice, its would-be defender—imagine me, I say, causing the destruction of a single one of its houses, or the death of one of its children! I confess that never in my life have I experienced such terror. So, while with my left hand I continued pumping petrol, with my right, plunged as far as it would go, I held on to the engine of destruction with all the strength of a tenfold determination."

"At last we passed over the Lido and over the houses of Venice, and, thanks to the pilot's faultless skill, settled gently on the unruddered bosom of a dock protected from the wind, and all was saved! But what minutes I had lived! The Venetians, who wanted to give me an ovation, noticed

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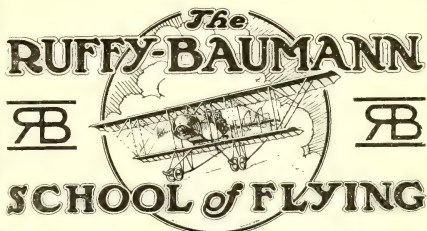


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A Message

TO: WOULD - BE AVIATORS

If you are wise—and presumably you are, or you wouldn't be thinking of entering the profession of flying—you will make sound enquiries before joining a school for tuition. Ask yourself whether the school you intend joining has the following advantages, which we offer:—

- (1) Limited list of pupils.
- (2) High-powered dual control tractor biplanes.
- (3) First-class instructors.

The first point is perhaps the most important, for by it we prevent our school from assuming overcrowded proportions, and therefore we are enabled to give each student adequate attention. The second point enables our pupils to fly any type of machine on completion of their tuition; and with regard to the third point, the names below must be more than familiar to you.

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FELIX RUFFY

AMI BAUMANN

CLARENCE WINCHESTER

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that I was rather pale. I had reason. They little suspected how near I had been to bombarding them involuntarily!" [The vision of a poet with a splintered funny-bone, grasping a T.N.T. bomb in one hand and pumping petrol furiously with the other is sufficiently comic.—Ed.]

RUSSIA.

The communiqué of November 4th says:—

The enemy dropped two bombs on the railway station of Klevan, north-west of Rowno.

AUSTRIA.

The communiqué of November 3 says:—

To-day after midnight, an airship dropped numerous bombs on Gorizia.

BELGIUM.

The rumour of the loss of a Zeppelin in Belgium is now confirmed. The Paris "Journal des Débats" says that on October 13 a Zeppelin exploded and fell at Poix St. Hubert, between Namur and Orlon. The machine was destroyed, but part of the crew were saved.

SERVIA.

The "Messaggero" (Rome, November 3) in a long and interesting account of the Servian defeats, says:—

"The Austro-Germans' aerial reconnaissances were specially efficient, and they used a new type of aeroplane, larger, faster, and more heavily armed than the type employed on the Servian side."

[Incidentally, how many months is it since THE AEROPLANE directed its readers to keep an eye on Servia for the next big developments? Quite long enough ago for our Government to have taken proper steps to help our people in that quarter. It may be noted that nothing has been heard lately of Admiral Troubridge and his naval forces, which official documents disclosed as being with the Servian Army several weeks ago.—Ed.]

* * *

Mr. G. Renwick, the special correspondent of the "Daily Chronicle" in Servia, describing the bombardment of Belgrade in the issue of November 5th, says:—

At Belgrade the bombardment commenced on October 5th. When crowds of refugees were streaming out of the city German airmen appeared and dropped bombs on them. But there was no panic under that rain of death and terror.

TURKEY.

The communiqué of November 7th says:—

On November 6th our fire hit a hostile aircraft, which fell into the sea near Kutschuk Kemikli, and our artillery again damaged the machine. The damaged craft

was towed by the enemy to the bank in the vicinity of hospital ships.

U. S. A.

A report from San Diego, Cal., October 11th, says that Lieut. Walter R. Taliaferro, stationed at the United States Army Aviation Corps school at North Island, fell 1,800 feet into San Diego Bay on that day and was killed. He ascended from North Island early in the day and had been almost continuously in the air, when about 11.30 o'clock his machine suddenly became unmanageable. The machine came down swiftly and fell into the bay about a quarter of a mile from shore, at this point about 50 feet deep. At nightfall divers from the U.S.S. "San Diego" had failed to bring the body to the surface. The aeroplane was fast in the mud 50 feet below the surface. The body was entangled in the machine.

* * *

Bulletin No. 3 of the Aero Club of America says:—

To bring together the aeronautic engineers, the aeronautic experts and aviators to discuss aeronautic problems, and to enable them to see other's aeroplanes and aeronautical motors in action as well as on exhibition, the Aero Club of America and the American Society of Aeronautic Engineers have decided to hold simultaneously an aero show, aviation meet and a Convention of Aeronautic Engineers. This will be the first time that the Aeronautic Engineers of America have met to exchange views and to discuss the problems which affect them all, and their first opportunity to see other's aeroplanes and motors. Some of the leading aeroplane constructors have never seen aeroplanes other than their own since the meets of 1910-1911.

There are at least one dozen aeroplane constructors who manufacture standard aeroplanes, and more than thirty concerns manufacturing and developing aeroplane motors. Then there are scores of makers and dealers of propellers, magnetos, radiators, stabilisers, aeroplane, dirigible and balloon fabrics, life-preservers, scientific instruments, such as compasses, barographs, altimeters, aneroids, revolution recorders, and special instruments such as the aviaphone, etc. The need is now to bring about the selection of the best, and the adoption of devices and instruments which afford greater safety and convenience. For instance, the compass is the most useful and necessary instrument for air navigation. It is not yet used by American aviators—therefore, we have practically no cross-country and long distance flying. The self-starter and muffler are not used, and many sportsmen await their adoption to take up aviation, and the general popularisation of aviation is delayed thereby.



A Tractor Biplane recently turned out by the Gotha Wagon Works, formerly makers of Taube-type Monoplanes.

The problems to be discussed, to solve which requires the combined consideration of the engineers, are many and varied. Here are a few :—

1. The increase of the factor of safety in the construction of aeroplanes; agreeing on a minimum, and enforcing same to prevent amateur constructors from sending unsafe aeroplanes into the air. At present only very few of the aeroplane constructors have the facilities or knowledge for testing or figuring out the factor of safety of different parts of their machines. The aim has been to develop a factor of safety of ten, and not less than six.

2. At present different types of aeroplanes are fitted with different types of controls, which differ sufficiently to require pilots to take additional courses of training to learn to operate them. In case of need this would cause considerable trouble, as the pilots would have to take special courses before being able to operate the machines available. In England, France and Germany the controls have been standardised, the one generally adopted being what is known as the "Dep" control.

Many American aviators favour the "Dep," but it may not be the best after all. To establish this fact, and whether or not a better one can be evolved, will require a general discussion by those who have to use the controls; and the standardising of controls bringing about the general adoption of one system can be effected only by general agreement on the part of the constructors and the approval of the Army and Navy authorities.

3. Standardising the propeller flange so that any propeller of a certain size can be used on any make of engine. At present they are all different, and the difference causes considerable inconvenience.

4. Standardising the mounting or frame for motors, so that an aeroplane having a standard mounting can take all water- and air-cooled motors of a given horse-power.

5. Standardising the aeronautical nomenclature; adopting standard names for different parts of aeroplanes. At present different constructors, engineers and writers use different names for the same thing. One finds, for instance, the part of the aeroplane where the pilot and passenger sit referred to as the "nacelle," "fuselage," and "chassis," which is misleading.

The discussion of motors, magnetos, radiators, propellers, and other vital parts of aeroplanes is most important at the time when the demand for aeroplanes is growing to the point where it necessitates the development of special machinery to do the work heretofore done by hand. The adoption of machinery in the manufacture of aeroplanes will logically result in bringing down the price of aeroplanes considerably, and that will bring about a more general use of the aeroplane for general purposes.

From the military standpoint the standardising has tremendous value. As our own aeronautical strength has to be the combined strength of the aeronautical organisations of the Army, Navy and Militia, general standardising of aeroplanes and controls will make every aviation squadron a unit which can be added to the other units to form a mighty air fleet in case of need, and each unit can be detached and sent to operate alone or with other units at any military base.

The aviation meet will be held at the Sheepshead Bay Speedway, which is located within thirty minutes' ride of the City Hall of New York.

The Aero Show will be held at the Grand Central Palace, Lexington Avenue, and 46th Street. The Convention of Aeronautic Engineers will also be held at the Palace, and may last several days. The time planned is late in April and early in May, 1916.

AUSTRALIA.

The Australian papers state that on August 20th, Mr. G. F. Pearce, Minister of Defence for Australia, went for a ride at Point Cook in a B.E. ("British Experimental," to quote the Antipodean journalist) biplane. Apparently



(Photographed by F. N. Birkett, Shepherd Bush.)

The Adjutant-Attaire Louis Noël photographed at Hendon on Saturday, showing the Médaille Militaire, the Croix de Guerre, with three Palms and a Star, and the Russian Cross of St. George.

the Minister enjoyed his joyride, which lasted some ten minutes. The pilot was Captain Eric Harrison of the Australian Flying Corps.

Captain Penfold (Mr. V. P. Taylor), who is well known in Australia as a balloonist and aeronaut, and who learned to fly a Bristol boxkite at Brooklands some years ago, has enlisted in the Australian Army. It is to be hoped that Captain Penfold will be put to more useful work than he is likely to do at the butt-end of a rifle.

Writing in the Sydney "Sun" of September 17th, Mr. F. E. Finlay says :—

"With reference to your leader in the "Sun" of the 11th instant, your article suggests that some rich men find the necessary amount of money and secure suitable grounds for an Aviation Corps. I was thinking that there would be quite a few men willing and patriotic enough to supply the necessary money for the scheme, but would not be bothered with the trouble of organising and bringing it to a successful issue.

"What I suggest, then, is that the young men of this city, who are anxious and willing to serve their King and country in the capacity of aviator, should band themselves together and form an Aero Club, to be called the Aero Club of Australia, or some other appropriate title, and let the rich men of the country see that the necessary talent is here in their midst, and that their efforts will be highly appreciated by us.

"Then, I feel sure, that the rich men of this country

will not be behind with contributions towards the club to supply aeroplanes and instructors and also the necessary grounds. I know of three other young men who are only waiting for the chance of having the opportunity to learn to fly. If there are any such rich men in this country to whom this suggestion appeals, and who would contribute in the event of the club materialising, then I will undertake to organise the club."

[Mr. Finlay's suggestion is thoroughly sound and deserves support from the Authorities.—Ed.]

THE R.N.A.S. COMFORTS FUND.

It is to be hoped that the enthusiasm with which those interested in the Naval Air Service co-operated with Mrs. Sueter last year in supplying the enlisted personnel with comforts, will blossom forth once more this year, the more especially as the Naval Air Service has expanded enormously during the last twelve months or so. A good deal is being done by some people to help the Fund both in matters of finished garments and in cash, but if Mrs. Sueter's good work is to continue a great deal of additional support is required.

Special thanks are due to Mrs. Balfour for sending a large consignment of khaki clothing.

Supplies of comforts are being sent this week to No. 6 and No. 8 Kite Balloon Sections in France.

The following cash contributions are acknowledged with thanks:—

The Aircraft Manufacturing Co., Ltd., £7 17s.; Refunded by Army and Navy Stores, £5 17s. 6d.; Arrol-Johnston War Relief Fund, £5; Mr. Eric Clift, £2; Mrs. Parke, £2; Pte. Todd, £1; Civilian Staff, King's North Air Station, 12s. 6d. (November 3rd), 15s. (November 4th), 14s. (November 5th). Brought forward, £1,235 1s. 1d.; total to date, £1,260 17s. 1d.

THE FLYING SERVICES FUND.

A week or so ago the fund for the relief of dependants of members of the Flying Services, which was instituted by the Royal Aero Club of the United Kingdom, had reached the very respectable total of £9,936 18s. This fact happened to be brought to the notice of the Lord Mayor, Sir Charles Wakefield, who generously rounded up the amount to exactly £10,000 by making a donation of £63 2s.

ANOTHER GOOD OPPORTUNITY.

Examiners and viewers are required for the inspection of aeroplanes and engines in the Aeronautical Inspection Department. Applicants should possess a knowledge of the use of measuring tools, and experience in wood or metal work is an advantage.

Men on war work should not apply, and preference will be given to those ineligible for military service.

Application should be made in writing to the Chief Inspector, Aeronautical Inspection Department, 13, Albemarle Street, Piccadilly, W.

FROM DENMARK.

THE AEROPLANE'S Danish Correspondent writes:—

The formation of new German aircraft works continues, the latest being Dr. Geest's Aeroplane Building (especially for aircraft with planes of Dr. Geest's invented concave shape) and Trial Building Co., Ltd., in Gotha (for big aeroplanes).

The idea of the giant Berlin statue of "the iron Hindenburg," that is the wooden one, to be studded with iron, silver and gold nails for 1, 2 and 5 marks, the total sum to be handed over to the "Red Cross," being imitated by most German cities, the imitation of Gotha consisted of a "Taube" monoplane, mounted with a bronze relief in front of a "Germaner as symbol of power and fighting-heart," and with pictures to be arranged of parts visited by Gotha Taubes, as Dover (by Karl Caspar), Paris, etc. The Duke pair were present at the inauguration, half-a-dozen aero-

planes crossed above, and the net sum coming in is to go to the national gift, under special care of the aviators.

* * *

As Danish correspondent I must in neutrality be allowed to tribute a posthumous fame to the German Judge and Oberlieutenant of the Reserves, Joseph Sticker, who appeared recently in the roll of honour, as reported in THE AEROPLANE. Having given his Danish competitor a fine race in the Gordon-Bennett Balloon Competition at Zürich, 1909, he won a private match at Copenhagen later in the year and afterwards rendered great services to the Danish aeronautique, among others, by arranging a big German partaking in the first Danish aero show of 1910, wherefore he was made honorary member of the Danish Aero Club and Knight of Danebrog. As keen aeronaut, Dr. Sticker started, too, in balloon competitions at London and Paris, and turned to aviation in its early days, as pupil with his friend, pilot-designer Engineer Domer, having, however, a smash and not meeting success in this field of aerial navigation, his efforts succeeding later in getting a Zeppelin pilot's brevet. Thus he partook in war service in the Zeppelin raids to England and was killed some time on September 3rd.

An extract of one of Dr. Sticker's last letters runs:—"We have here a week full of events behind us, which has especially offered me many interesting experiences. In the night between August 9th and 10th I crossed the Thames. From the 12th to 13th I was above Harwich and—*c'est la chose principale!*—between August 17th and 18th as the first and only ship above London City. Details to be told personally later. We had no hits that night, it looking so much worse between the London Bridge and Blackfriars Bridge! . . . All friends everything good! With my heartiest greetings yours always truly, J. S."

* * *

The crew of "Z.35," consisting of 7 officers, Captain Masins as commander, Oberlieut. Stegmann, Lieut. Pallandt and Officer-Replacer Hans, 1 super-engineer, 3 engineers, 2 assistant engineers, 1 super-pilot, 1 pilot, and 1 wireless operator, can say, that a late reward is better than none, when they have now all been awarded the Iron Cross, 2nd class, for the attack by named airship on Paris on October 27th of last year.

* * *

In mentioning an aviator recently for having brought two French aeroplanes down in an aerial fight on a battle-plane, the German communiqué rendered the name erroneous as that of the duration recordman Boehm, while it was that of Flight Sub-Lieut. Böhme who volunteered, being a Grade monoplane pilot of peace times and unfit for military service. Till May of this year he was test pilot of new aeroplanes in a Rhine city (likely by the Kondor Works in Essen-Ruhr); since June he flew on active service with Oberlieut. Büchs as observer, training for battle-plane flying a few weeks before above-mentioned incident took place, for which he was awarded the Iron Cross, 1st class.

THE LORD MAYOR'S AERO-SHOW.

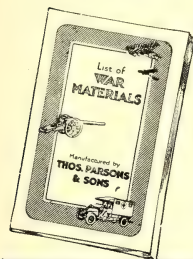
This year, for the first time in history, the Lord Mayor's coach had a serious rival in the procession. The crowds were highly delighted to see an authentic aeroplane being towed behind a motor-lorry, followed by half of its planes and a travelling repair-shop, which seemed unnecessarily suggestive. Another car contained several flying officers, who were evidently trying to look less embarrassed than they felt. One is glad to be able to assure them that they did not look anything like as ridiculous as they looked as if they thought they looked. Five anti-aircraft guns mounted on motor lorries, together with a large searchlight, also attracted a great amount of attention, some encouragement, and a little sarcasm.

Keep your Powder dry.

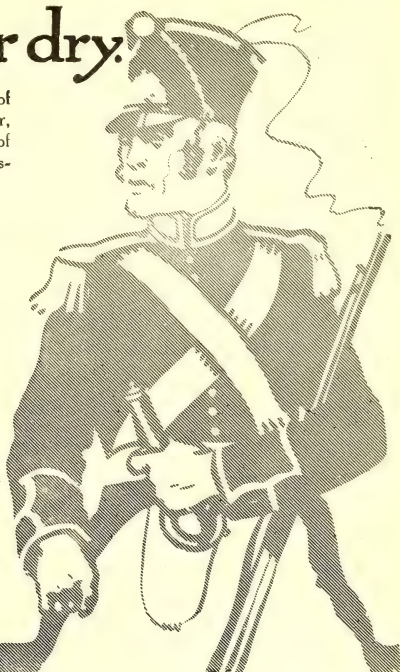
The phrase is Cromwellian and, taken literally, rather out of date. This phrase could well be substituted by another, such as "Buy your Paint ready for use." Paint plays a part of immense importance in modern warfare—to protect, to dissemble, to sanify.

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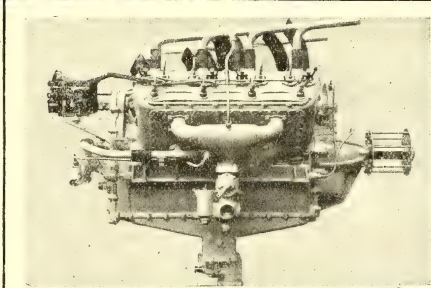


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TWO TALL STORIES.

A correspondent writes:—

"I heard the following story at a village Magic Lantern Show the other day and thought it might amuse you as much as it did me. I write it just as I heard it and leave comments to you:—

"An English aviator had to come down in Belgium and had been taken prisoner by the Germans. He had a type of machine which was new to his captors, and they said he must teach them how to fly it. He agreed to do so, but of course they objected that as soon as he was in the air he would simply fly off home, so he said that they could send two men up with him, one on each side, with loaded pistols to shoot him in case he showed any signs of trying to escape.

"They agreed to this, and accordingly the pilot was strapped in and the Germans got in with their pistols and they started off. As soon as he had got his height, the Englishman simply looped the loop, tipped out both Germans, and flew home."

Comment would merely spoil the story.

The other yarn comes from Petrograd, the home of tall stories. The cutting, sent by a correspondent, does not indicate the paper or news-agency which is responsible or it would be duly acknowledged.

"An exciting fight in the air between German and Russian airmen near Lakovichy is recorded. A Taube was seen in the air over a Russian train. Several bombs were thrown unsuccessfully by the airmen before a Russian aeroplane appeared from the direction of Baranovitch. The Taube made persistent attempts to escape, but the Russian pilot guided his aeroplane with great skill, and at a favourable moment rushed like lightning upon his adversary's machine, which was struck by the chassis. In this attack the Russian aviator applied the method of Nesteroff with complete success. The blow was so violent that the Taube was overturned, and it fell to earth like a stone. Afterwards the Russian aviator made a volplane, and on landing found the Taube smashed to pieces and the dead German pilot lying beneath it. The chassis of the Russian aeroplane had cut the propeller of the Taube in two and had caused the benzine in the tank to explode."

AT SEA.

The "Telegraaf," Amsterdam, November 6, learns from the Belgian frontier that on Friday afternoon a fight occurred over the North Sea, near Heyst, between a German aeroplane and one belonging to the Allies. Owing to the strong wind both aeroplanes were much knocked about. Finally the German fled and was chased until he had nearly reached the coast. The Germans then fired at the Allies' aeroplane, which got safely away.

The "Journal of Commerce," Liverpool, in reporting the arrival at Manchester of the Cork Steamship Company's steamer "Avocet," describes how the vessel was attacked by three enemy aeroplanes. The incident took place on October 30th at 11.15 a.m. One of the aeroplanes was a large battle-plane, which dropped no fewer than 36 bombs, some of them only missing the steamer by not more than seven feet. Having apparently exhausted all the bombs, the battle-plane took up a position off the port beam and opened fire with a machine-gun.

Attacking from a height of 800 feet to 1,000 feet, and going ahead of the "Avocet," the aviator turned and came end on to meet her. When parallel he dropped his bombs so as to have her full length, and so make sure of scoring a hit. The ship's helm was put hard a-starboard, and as she swung to port three bombs narrowly missed the starboard bow and three the port quarter. Had the vessel continued her course, these bombs would have rained on her, dropping on the fore'sle and poop deck. The small planes crossed and re-crossed the vessel, dropping bombs as they passed over her. They

all made a most determined effort to sink the ship, and only failed because they had not nerve enough to fly lower. Seeing the ship was unhurt, they opened fire with rifle. The action altogether lasted 35 minutes, and then the aeroplanes flew away.

The "Journal of Commerce" adds: "It is a tribute to the men of the merchant service that the man on the look-out actually kept his station and reported a floating mine ahead, while bombs were bursting around him."

THE INVASIONS OF ENGLAND.

The following dialogue, somewhat fatuous in manner, though slightly informative in matter, took place in the House of Commons on November 2:—

Mr. R. McNeill (U., St. Augustine's) asked the Prime Minister whether the authority vested in Sir Percy Scott for the defence of London extended to the coast line north and south of the mouth of the Thames; whether he exercised undivided control over all aircraft as well as guns, lighting, the movements of trains to and from London termini, and the police and the fire brigades; and, if not, whether it was proposed to make the defence of London against aircraft effective by giving unified control in these respects to Sir Percy Scott.

Mr. Balfour, who replied, said: As my hon. friend will have seen from the previous replies I have given on this subject, Sir Percy Scott's duties are concerned primarily with the gunnery defences of London against attack by enemy aircraft. But it must not be supposed that the co-ordination between the several Services mentioned in the question is incomplete or that the requirements of the anti-aircraft department of the Admiralty are not regarded as decisive and promptly met.

Mr. McNeill: Is there any intention still further to unify the command in this respect?

Mr. Balfour: I dare say that if we were arranging for the protection of London in peace time against aircraft and other attacks we should put it under a military governor, as is the case, I believe, in Paris, but I think the idea of so colossal a reorganisation at this moment would cause a great deal more confusion for some time at least than any advantage we should secure.

[Considering that we shall shortly have to reorganise the whole Government in any case, and probably the whole nation, and the British Constitution as well, if we are to avoid being beaten by Germany, such a trifling thing as the reorganisation of London defences seems a mere flea-bite.—Ed.]

An inquest was held on November 5th on the body of another victim of the last air raid in the London district. The evidence showed that the young man was killed by a part of a bomb, and not by fragments of anti-aircraft shells.

In summing up the coroner said that out of thirteen cases he had investigated only one person was inside a house when he was injured. This emphasised the importance of seeking cover during a raid. He was proceeding to describe the law of murder when a juror said he thought the Germans did not care what they said. "War is war," he added.

The coroner said it seemed rather ridiculous to return a verdict of murder, and he thought it would be better to mete out the punishment to the guilty person or persons at the end of the war. Supposing they got the Kaiser and some of his people here, the police could take them before a magistrate. He suggested that they returned an open verdict.

The jury found that the deceased was killed by a bomb dropped from a hostile aircraft by some person or persons unknown. Answering the coroner, the foreman said they did not wish to add, "Contrary to the rules of civilised warfare."

One welcomes the advent of at least one intelligent jury.—D. W. T.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Aero-motors: In Kind and Construction.—(Continued)

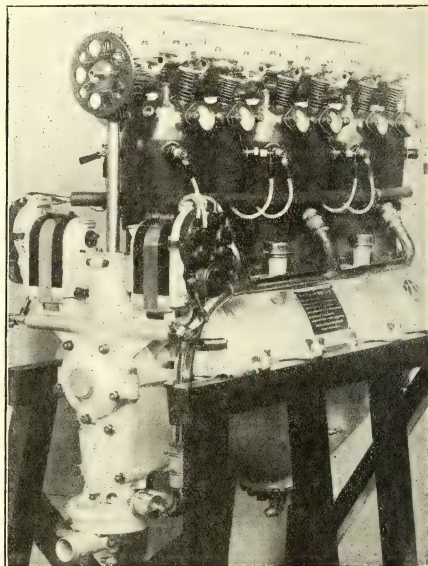
BY GEOFFREY de HOLDEN-STONE.

On the other hand, I am entirely agreed with the practice—not even as a necessary compromise—of inserting the sparking plugs on one side of the combustion-chambers. It is, after all, the practice in nearly all rotary types, as well as in many stationary models that are not specially limited to that position. It certainly helps to disencumber the top of the motor mass; always a good thing; and it renders the plugs themselves far more accessible, which is a better one, from the pilot's or engineer's point of view. And, after all, the plugs thus placed are really no more liable to sooting-up or oil-fouling than in any other position. In fact, an experience of Mercedes motors—in which this side position has always been a feature—dating from their earliest appearance, has shown me that misfiring or any other plug trouble is their rarest defect.

I have always found, too, in all Mercedes models—this one being no exception—that although the pistons are neither heavy nor light nor more than in the "general average" class as regards design, they were always—as in this case—notably well balanced. This latest model has domed piston heads, whereas an earlier one—which I prefer in this respect—had them cupped. The pistons in this model are of steel, but for some reason so far unexplained, they have cast-iron bushings for the gudgeon-pins, driven into the small ends of the connecting-rods, and having a series of small holes for lubrication. In earlier examples, too, the connecting-rods were of I-section, machined all over in the common fashion of any high-grade motor-product, and drilled through the web of the shanks for lightness' sake. Those in the present model, however, are tubular like the gudgeon-pins, and eke the crank-shaft. Unquestionably they are light and strong. But the hollowing has been carried out to such excess in all three parts that, while the oil-pump is in no danger of breakage through abnormal work, the consumption of lubricant would hardly be economical. One thus perceives the adaptation of an idea, quite in the best German manner; but where is the much-vaunted German thoroughness in the conception and purpose thereof? At any rate, although the crank-shaft is only carried in four bearings instead of the seven one might expect, it is hardly likely to break under any stress of flying, being some 54 mm. in diameter, while the bearings themselves are 70 mm. long.

Lubrication.

The lubrication system of the Mercedes aeromotor is at least thorough, leaving nothing to chance; even such chances of splash or starve as are commonly taken in road-practice justifiably enough. Practically the crank-shaft itself forms the reservoir for the reciprocating parts, the cylinders, and all bearings; the oil being originally delivered thereto—by a rotary type of pump driven from the vertical shaft—via the aftermost bearing in the conventional way of most systems of the kind. But the tubular casing of the vertical shaft forms a second main conduit—hence its ample diameter—for the valve gear; the oil being driven up through it into and through the hollow cam-shaft, which is duly perforated to allow the oil to reach its main bearings and to flow into the shaft casing. From the oil-bath thus constituted, the cams and the rollers at the inner ends of the rockers are lubricated; and the little metal splash guards that project from the interior of the aluminium casing cover—one for each rocker—drop the oil into the hollow bodies of the rockers, and allow it to run to their bearings. These bearings are also lubricated through the hollow lay-shafts on which the rockers are pivoted, from an oil box on the top of the cam-shaft casing. Finally these lay-shafts return their oil into the forward end of the casing;



A Mercedes Engine of the 1913 Type.

from which the entire surplus runs down the return-pipe into the crank-chamber. Except for the little that inevitably gets through the ends of the rocker bearings, there is no wastage, and the top of the motor is thus kept clean.

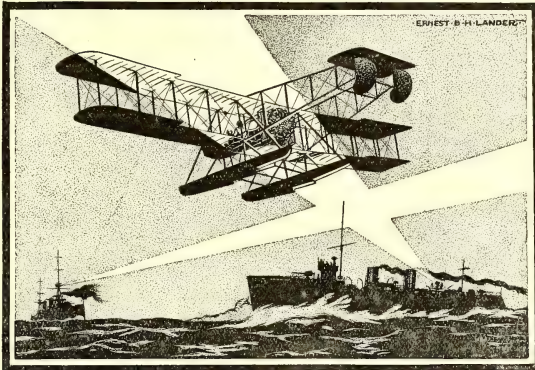
Similarly, the water circulation is well thought out; for while the jointing between the jacketings of each pair of cylinders ensures a clean run-through to a pair of water outlets aft—thus getting rid of piping where it would be most in the way—the inlet pipe on the exhaust side, having a branch to each jacketing, ensures an even delivery of cold water to each pair of cylinders.

Carburation.

The carburation, however, is rather interesting, for the results which in other vertical aeromotors are obtained from two carburetors, in the Mercedes seem to be achieved well enough—except in the matter of consumption—with one. That one, although formed in a single aluminium casting embodying a common water-jacket fed from the jacketing of the central pair of cylinders, is, nevertheless, in duplicate, there being two float-chambers, two choke-tubes, and independent main and pilot jets, as well as two throttles and two main trunks supplying three-branched manifolds. However, the two main jets are in such close neighbourhood—hardly more than a couple of inches on either side of the centre of the carburettor—that the mixture supply to all the cylinders is probably as even as it would be if the choke-tubes were interconnected; which is, of course, the chiefly desirable result for an aeromotor, next to economy. So the comparatively poor showing of the Mercedes in this latter respect may be put down to the account of that unnecessary pressure-feed. It is certainly a curious fact that German aeroplanes have constantly been "caught alive," so to say, during the war, for no other reason than that they ran out of petrol.

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Ignition.

The ignition is conventional enough, for the mere mounting of two simultaneously-fired sparking plugs horizontally at opposite sides of each combustion chamber is nothing new, and no absolute assurance against misfiring; as any conditions bad enough to foul one plug would probably foul both, and insulation failure in these days of mica or steatite plug-bodies—practically heat-proof and wet-proof—is hardly to be feared.

Of course, the great advantage of the Mercédès aeromotor from a military standpoint—which it shares with all verticals and most V-types or radials—is that it lends itself to complete silencing. This is the very point upon which I happen to have insisted for the past five years to no purpose; not because I had any special information as to German intentions in this regard—which appear, nevertheless, to have been most faithfully carried out—but because it seemed such an obvious thing from every point of view. Especially since, by the extremely simple device of leading the exhaust gases into a casing with stationary internal vanes, set counter to other vanes on the flywheel enclosed by the said casing, it is perfectly possible to damp out all noise without lessening the power of the motor. I can only say that I have seen—or, rather, heard—it done.

So much, then, for the Mercédès aeromotor in detail; as one which, while displaying no originality, nor more than common elegance in its design, is excellently built of the best of material, and the most appropriate in every detail, clearly so as to give long and reliable service, with no more skilled attention than any competent car-driver should be able to give it. It is neither light nor heavy, of its type, as its weight all on, without the radiator or any water in the jackets, is stated to be some 390 lbs. Certainly it has been tried high enough, for not only were its original Grand Prix editions subjected to the most heart-breaking stresses both before and during the race itself, but on at least one occasion it had remained aloft for twenty-five hours on end. One is only curious now to see what will become of it—if anything—in manufacture and use on this side of the Rhine.

(To be continued.)

MR. DOOLEY VISITS HENDON.

"What d'ye think iv this flyin' business, anyhow?" asked Mr. Hennessy, as they arrived at the Hendon Aerodrome last Saturday afternoon.

"I think th' young gin'rations has ol' Elijah pushed right off th' map. He has about as much repytation left as Jonah when he comes up aginst wan iv they submarine fellers. Iv coarse ye onderstand this ar-rt was invinted be th' Irish, Hinnessy. Look at th' Brothers Wright. Ar-rn't they citizins iv th' United Sta-ates? Any stooind iv nath'ral hist'ry will tell ye Wright was niver a German na-ame, so what else could they be only Irish? An' ye heerd what that milith'ry officer fella with th' speakin' trumpet said a minnit ago? 'Mr. Roche-Kelly is now ma-akin' a flight accompanied wid a passengerr.' An' besides, what's th' na-ame iv th' very pla-ace where we now stand? Doesn't practically ivvry visitor call it th' Airy O'Drome? Thurly, th' Irish ar a great na-ation, though ye mightn't think it to look at them that's thyrin' to get to Ameriky at this moment.

"Annyway, it's good to see these young dinnizens iv Hindon thirstin' f'r glory. Th' bar's full iv them. So's th' sky. It is reported on good authority that th' clouds over this thraict iv counthry ar-re scratched to such an xtint that ye would see th' marks as plain as a map iv the Tube Railways if it wasn't f'r th' action iv th' wind, which kapes them on th' move. Look at th' quantity iv machines hoppin' an' buzzin' all over th' pla-ace. I counted twenty-three iv them in use a minnit ago.

Some is gin'rally on th' ground. That's th' soort would suit meself best.

"I have me ambitions, Hinnessy, an' wan iv them is to stay on things I couldn't fall off if I was to thry. You see that speedy machine over there just comin' into th' field from th' clouds? It looks like th' man was writin' him na-ame in th' air, an' it's to be wan iv those na-ames like Dooley on'y with more O's in it. . . That ma-akes sivin distinct O's in less time than it ta-akes to buy a man a drink. They call that a Vickers Bullet, but I'd like to see th' gun that could fire a bullet that way. A hollow corrk-screw would ma-ake a fine barrel f'r it.

"This wan here, with th' fine paint on it an' th' illigant colours on th' tail, is a Gov'nmint machine. Ye c'n tell that be th' 'no-ixpinse-spa-ard' look it has. It's called a B.E., which means somethin' bloomin' ixpirrimental. This kind is turr'ble ixpensive, bein' designed be rale Gov'nmint experts. Th' boss officer says: 'Build me somethin' new this mornin', says he. 'Very good, sir,' says his deputy-assistant-sub-expert. 'What sort is it ye're wantin'?' 'Oh!' says th' boss, 'Anny soort so long as it's rale scientific an' fitted with theoretical notions iv th' best quality.' So th' expert goes back into his official dhrawin' room, upholstered be Wa-arin' an' Gilhooley, an' ta-akes out his biggest slide-rool an' startts to wurruk."

"What's a slide-rool?" enquired Mr. Hennessy.

"It's wan iv them thrifles only a highly-thrained Gov'nmint expert c'n understand," said Mr. Dooley. "Special brands iv th' best ile ma-ade be Wa-akefield ar-re used to ma-ake th' rools slide. It doesn't matter in th' least what th' rools about constructin' a flyin' machine ar-re, these Gov'nmint fellers c'n ma-ake them slide like an automobile on a muddy road. Most iv th' machines used here ar-re Caudhrons, ye might observe.

"But it's wonderful how official them official classes is. Look what happens this afternoon comin' here. Just whin we come be th' Welsh Harp—which iv coarse means th' Irish Harp, there bein' no other kind known to civilisation—injoyin' th' breath iv Hivin in Pat Quill's motor-car, up comes a polisman an' says we're goin' faster than th' law allows. An' whin we begin to answer him back like free an' indipindint citizens up comes two more polismen dhressed like farm-la-aborers, with stop-watches in their hands, an' wurruks out th' speed till Quill thinks he swindled th' man he bought th' car from. An' that's how tax-payin' civilians gets thrapped an' down-throdden be th' official classes.

"But wearin' uniforms has its advantages, Hinnessy. Look at th' young French officer comin' this way. That's Louis Noël, at wan time th' favorite iv th' gurrils an' th' hardest wurruking pilot at th' Hindon Airy O'Drome. He's got a short vacation after fightin' in th' air f'r a year all over France, an' comes to see his old friends before goin' to Sal O'Neeky. Look at his medals, Hinnessy, an' see how ivvry-wan sha-akes hands with him an' pats him on th' back. I'd rather wear medals iv that pattrn than ma-ake a fortune sellin' cheap blankets to an over-gin'rous War Office. Good luck to th' la-ad!

"There's a divil iv a lot iv machines flyin' now. Half iv th' fellers kape doin' strights, which is neces's'ry but not ixcitin' to watch. There's wan with a great leather coat an' two pair iv goggles nearly got off th' ground a minnit ago. It's fine to be young. See that wan—a de Havilland, somewan called it—ninety miles an hour as sure as I'm a na-ative iv Roscommon, an' nobody says a wurrd to th' feller, while we disthurb th' majesty iv th' law be doin' only twenty-eight an' p'rhaps a thrifle more.

"It looks like they would kape flyin' after darrk. I think we'll be startin' f'r home before they close th' saloons down."

"We might come back an' see some more to-morrow," said Mr. Hennessy. "We might see an accidint."

"Divil a chance," said Mr. Dooley. "Th' luck iv these la-ads is ama-azin', whin ye notice how crowdeth th' field is. But we'll come again, bein' Sunday an' no other entertainmint available." . . .

"It's a fine day f'r November the sivinth," said Mr. Hennessy next day. "Is it always like this at Hindon?"

"Ask th' man at th' ga-ate," replied Dooley, "an' watch his fa-ace turnn pale an' his smile fa-ade away. Whin it isn't rainin' like th' Im'rald Isle it's blowin' like a typhoon in Texas, an' whin it's nayther rainin' nor blowin' they'se a fog that thick wan Caudhron c'n hardly see another. An' whin ye get a calm day like this, ivry machine in th' pla-ace wurrucks till th' ile runs down its fa-ace.

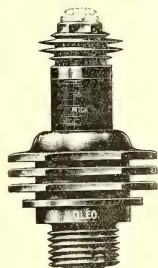
"Th' minnit th' wind laves off th' school instruchtor says to his mechanical advisors, 'Bring out both th' machines,' says he. 'Fall in the pupils,' says he, 'Colored socks three pa-aces to th' rear. For-m four's! Prepa-are to dhraw lots! Two men in ivry hundhred will be silicted f'r a shtraight flight over th' gra-ass not exceedin' fifty yards!'

"An' mar-ark my wurruds, Hinnessy, these flyin' schools will pojooce a grea-at ar-rmy iv bra-ave la-ads, guaranteed be th' Aero Club iv Grea-at Britain an' Ireland to be ca-able iv throwin' bombs on annythin' in th' German Impire, if this war c'n on'y be kept goin' long enough."—D. W. T.

A PLUG OF INTERNATIONAL IMPORTANCE.

The plug illustrated is one of those specially made by Leo Repault and Co. for aero engines. It is of exceptionally fine workmanship, and the makers claim that it will stand any heat or pressure.

This plug has been found thoroughly satisfactory on engines up to 100 h.p., and is fitted as standard to the following makes:—Gnome, Le Rhône, Clergèt, Salmson, etc., etc. An illustration does not do justice to this plug. It has to be handled if one is to appreciate its sound construction and beautiful finish.



No. 29.

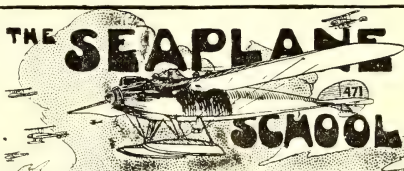
DIRECT-LIFT EXPERIMENTS.

Those who have been interested in aviation for some time will remember the name of M. Passat, who at a very early Aero Show attracted considerable attention with a practical demonstration of the lifting power of a swan's wing.

Since that date M. Passat has not lost his belief in the possibilities of a direct-lift flying machine, and he has now produced a fairly large-sized model with flapping wings which is capable of lifting what appears to be a large amount of weight for a comparatively small expenditure of power. That is to say, by turning a crank by hand the machine can be made to lift over 20 lbs. dead weight.

M. Passat claims that this model demonstrates the possibility of lifting a dead weight of 40 lbs. per h.p. direct from the ground, and that by subsequently altering the angle of the wing it is possible to obtain very high speeds. Furthermore, he claims that a fully developed machine on these lines would be very valuable for dropping bombs and making observations, as by altering the angle of the wings, and adjusting the engine power to suit, the machine could remain motionless in the air for bomb-dropping. He also claims that such a

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machine would be very useful for night flying, as it could descend vertically as slowly as may be desired.

Those who are still interested in the possibilities of flapping-wing machines may find a visit to M. Passat at 106, Durham Road, Wimbledon, S.W., of interest, and whether M. Passat has really discovered anything new or not, he certainly deserves credit for the hard work he has done and for his perseverance in endeavouring to solve the problem of the orthopter.

M. Passat also claims that he has recently produced a form of wing which has an astonishingly good gliding angle and is able to carry a considerable weight for a long distance in quite a reasonable wind with a glide like that of an albatross. This wing form may also be well worth investigating, because if properly carried out tests show that it is all the inventor claims for it, it may very possibly have a value as an improvement in the present type of aeroplane.

A BUSINESS MOVE.

It was evident long ago that the increased demand for Emaillite would necessitate a move into larger premises, and this has now been accomplished. The regulations which govern so important and delicate an industry as the manufacture of dope for aeroplanes are very stringent, but the new factory which has been erected at Willesden Junction, adjoining that of the General Aeronautical Company, Ltd., fulfils in every detail the needs of the case.

The building is as up to date as one might expect from a firm which has enjoyed so long and so busy a career, and is capable of quadrupling the former output of the factory. The British Emaillite Company, Ltd., is certainly doing its share to help the aircraft industry along, and the opening of the new works will facilitate the supplying of this well-tried dope.—D. W. T.

SCHOOL REPORTS. HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Armitage, Horniman, Moody, and Ovens.

Circuits with Inst.: Prob. Flight Sub-Lieuts. Apin, Davenport, Graham.

Pupils doing circuits alone: Prob. Flight Sub-Lieuts. Cross, Gammon, and Sadler.

Certificate was taken during the week by Prob. Flight Sub-Lieut. Man.

Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Ed. Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Pupils with Instructor on machine: Messrs. Harkness, de Grauw, Willy Coppens, Lannoit, Stuart Cole, Flanders, Cuthbertson, Bolton, Fraser, Pauli, Vernon, Wood, Laidlaw.

Doing straights or rolling alone: Messrs. Stewart, Liddell, de Grauw, W. Coppens, Thomson, Sherwood, Giule, Bailey, Griffiths.

Figures of eights or circuits alone: Messrs. Stewart, Liddell, Griffiths.

Machines in use: 3 Ruffy-Baumann (60 and 50-h.p.) Caudron type tractor biplanes.

Although the weather was extraordinarily unfavourable a reasonable time was spent in the air as well as in the workshops. Mr. W. G. Stewart took his certificate.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Baker, Barrow, Begg, Bowick, Brown, Brynildsen, Campbell, Collier, Cumming, Duffus, Edwards, Fellowes, Hodgson, Lashmar, Mellings, Murdoch, Nash, Nicholson, Owen, Patterson, Podmore, Sainter, Schollaert, Symington, Halford-Thompson, Whincup, Barnes, Godfrey.

Certificates were taken during the week by Captain Cadogan-Cowper, and Messrs. Lashmar, Nash, and Duffus.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, and Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday, and Sunday by Messrs. Roche-Kelly, Kenworthy, and Virgilio.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, and C. M. Jacques.

Pupils: Messrs. Dawson, Roberts, Lees, Scott, Lambert, Hunt, Atkinson, Heyn, and Summerskill, rolling.

Messrs. Braim, Thorpe, Porter, Knowles, Renton, Lewis, Burgess, Woods, and Hardy, straights.

Figures of eight or circuits alone: Messrs. Franklin and W. Warren, jun.

Machines in use: Four L. and P. tractor biplanes.

AT THE HALL FLYING SCHOOL.

Pupils with Instructor Cecil Hill: Messrs. Broad, Nicolle, Butterworth, Drew, Stirling, Dodd, Dresser, Shum, Rattray, Manley, Sepulchre, Cook, Evans, Punnett, Wilkins.

With Mr. Charles Bell: Messrs. Wooley, Lieut. Bell, Redford, Mann, Smith, Mann, Arnsby, Capt. Grey, Milbourne, Cosgrave, Chapman, Bond, Thom, Bennett, Niel, Baron Ackroyd.

Owing to an oversight it was not stated last week that Mr. Seward took a very good certificate.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

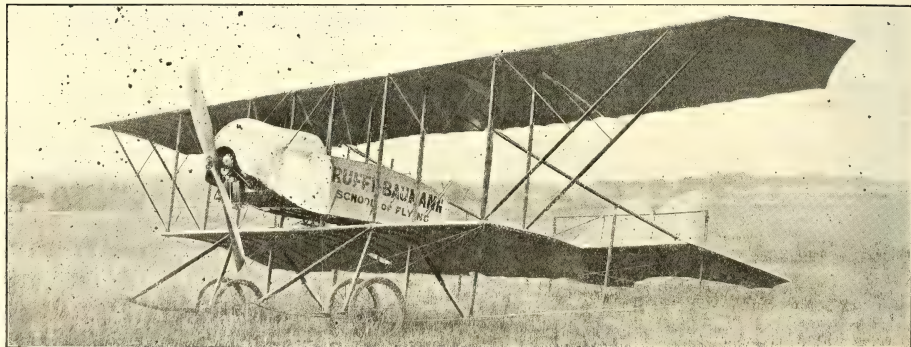
Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Messrs. Franck, Gammon, Halet, Holman, McConnell.

Pupil doing straights and rolling alone: Mr. Horridge.

Pupils doing circuits with Inst.: Messrs. Eraser and Hughes.

Machines in use: Grahame-White biplanes.



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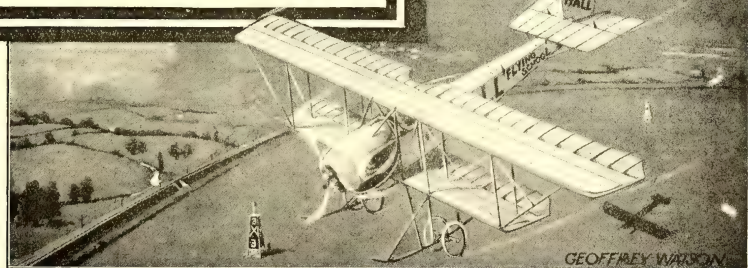
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

THE MINUTE STRUCTURE OF SILVER SPRUCE.

WRITTEN AND ILLUSTRATED BY JAMES SCOTT.

The reason why spruce is of so great value in the construction of various parts of aeroplanes becomes manifest upon making microscopical examinations of the wood. We must always remember, in this connection, that the importance of bulk depends on the formation and perfection of minute details. If the latter are systematically precise, and devoid of defects attributable to causes outside their own method of growth, the final product should possess all the merits desirable. The strains to which timber is subjected in aerial apparatus are such that, beside strength, it should show lightness, elasticity, and toughness. These are the properties of spruce, especially the silver variety.

Unfortunately, there is much confusion in trade circles concerning the naming of trees of this class, spruces, firs, and pines being indiscriminately referred to. Strictly speaking, the special tree now being considered should be called the spruce fir, and is known scientifically as either *Abies excelsa* or *Picea excelsa*. It has tetragonous, or sets of four, leaves, and drooping cones, and can stand much severer weather than do the pines—this trait, no doubt, helping to improve its quality. Another distinction is that the cones fall off whole, whereas those produced by other members of the tribe remain continuously in position on the branches.

The spruce fir is also called the Norway pine, the latter being really a misnomer.

The general name of the group to which the spruce fir belongs—these include firs, larches, pines, cedars, and so on—is *Conifera*, on account of them all developing cones, or woody objects, consisting of separate scales overlapping around the central shaft, and having the seeds behind them. These seeds are released when the scales lift themselves. By the way, the seeds should interest readers, as they are winged, and "plane" down to long distances.

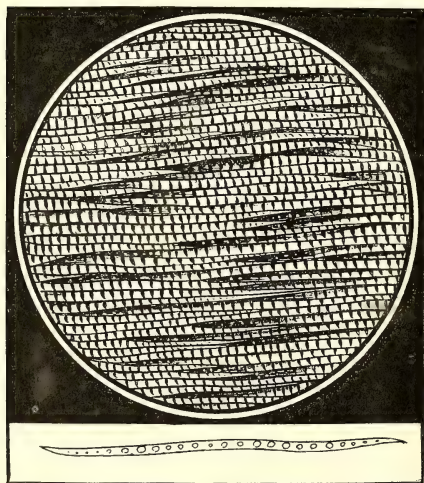


Fig. 1. About 1/24-inch diameter view of the surface of smoothed Silver Spruce, with rows of resinous nodules. A detached, cleaned fibre is shown below, magnified.

The term "deal" is just as loosely used as the tree names. The true meaning of the word applies to pieces of pine-wood nine inches long and three inches square in thickness; but it also denotes the timber of the Scot's fir, *Pinus sylvestris*, this being called red or yellow ac-

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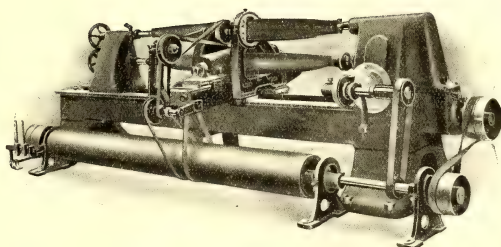
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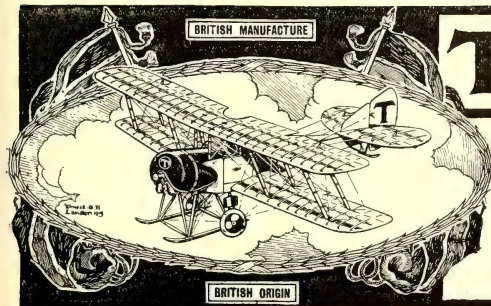
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cording to tint. The wood of the spruce fir is sometimes called white pine.

The proper name for the timber of the spruce fir is whitewood. The best kind is undoubtedly silver spruce; but for coarser work West Virginia spruce is found to be satisfactory. Spruce fir is also known as Norway spruce or—wrongly—pine. It does not tend to clear matters to learn that *Picea alba* is the white spruce.

An advantage in using wood that has grown in an extremely cold climate is that it has been less liable to weakness due to the attacks of insects and fungi, which are checked by the low temperature. It is true that these pests do insinuate themselves into such quarters, but not to anything like the extent that is the case with wood grown in temperate or hot zones. The timber is thus efficiently hardened against possible infestations in its cut state. Many kinds of wood, of poorer constitution, are so badly eaten away inside, where no eye can ordinarily detect the inferiority, that parts prepared from them are always likely to break under severe strain. This point needs bearing in mind on behalf of spruce fir.

Trees increase their girth by depositing successive layers upon the underside of the bark—which is therefore gradually dislodged and split—and on the outer, but of course still concealed, surface of the preceding wood. The soft cylinder thus created hardens into a lignous one, and is revealed on the end of a cut log as an annual ring.

By referring to No. 3 illustration we can understand why these rings show so plainly. Bear in mind that the fibrous cells are long and narrow, and appear collectively as a sort of mesh when cut across. During spring and summer these fibrous cells are individually much thicker than they are in the autumn, so that the last formed are more densely packed together, there being more of them in a given space than there are at an earlier period. In winter, growth is entirely suspended.

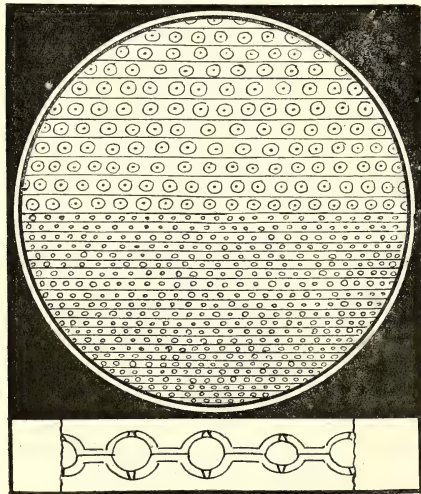


Fig. 2. A lengthways slice of Silver Spruce magnified larger than in Fig. 1, showing the junction of spring wood (above) with autumn wood (below). Lower space—showing how the pits form.

When spring returns the freshly formed fibres are allowed full expansion, being more than twice as thick as the last ones of the previous autumn. They maintain this fullness throughout the summer, but as the weather becomes colder they lose their swelling power a little at a time, each set therefore being slenderer than those

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behind them. When growth stops for the season there is a definite outer compact line of autumn fibre-cells, and the density fades off towards the centre of the tree until the dark autumn line of the previous ring is encountered.

If these annual cylinders are uniform in separate width the timber gains in elasticity, and in this connection spruce is distinctly meritorious. We all know that a hollow tube of any substance is much stronger than a solid rod of the same diameter. A tree consists practically of several fibrous tubes inside one another, the inner face of each of which is looser than its outer face. A growing trunk is, therefore, so pliable that the wind simply causes the cylinders to bend gracefully, they being eased over against one another, as it were, instead of snapping as would be the case if they were absolutely rigid. There is sufficient cohesive and adhesive power among the fibres to allow the whole wood to be bent, within limits, without dividing. Being hollow, the fibres act like so many elastic strands, resuming their customary attitude when relieved of the tension. This suppleness is imparted to the trimmed timber procured from the trees, even though it may consist of parts of the layers instead of whole rings.

A special feature belonging to coniferous wood is that the fibres (which, of course, in growing are upright) have rows of minute circular saucer-shaped pits along them, those of the spruce fir being, as a rule, smaller and neater than similar things in other species.

In No. 1 illustration is depicted a view of the smooth surface of a piece of spruce quartering, viewed without any other preparation, with a strong light shining upon it. Note the actual dimensions of the portion. To properly understand the formation it becomes necessary to make thin slices or sections, both lengthways and across, and magnify them on a larger scale, as is done in illustrations Nos. 2 and 3.

A separate fibre is a long, double-pointed, cellulose walled tube. Originally it is cylindrical, but mutual pressure flattens it and produces sides, in certain of which are the depressions already referred to. As all parts are transparent when magnified, the cleaned openings are seen as tiny circles with central spots indicating openings.

The widest parts face outside a fibre. Imagine a long depressed tube in opposite sides of which are sets of round openings fitted with glass basins, each of the latter having a hole at the bottom. The formation is given

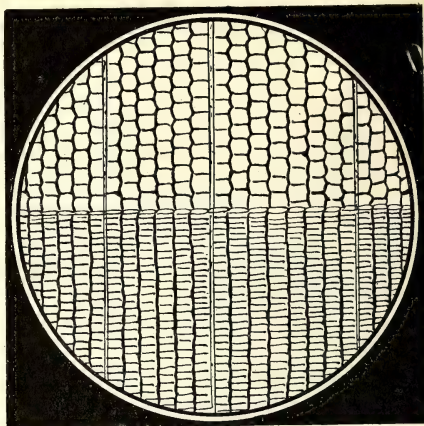


Fig. 3. A cross slice of Silver Spruce magnified larger than in Fig. 1, showing the junction of spring wood (above) with autumn wood (below). This variation marks off the annual rings. The meshes are the openings of tubular fibres of the kind shown at bottom of Fig. 1.

diagrammatically in No. 2. Any fluid within the tube could pass out through the holes; while if the tube were empty, fluids could pass into it by the same means.

Similar transference of gases and fluids occur in actual fibres, and in this way a very uniform arrangement of the particles throughout the whole of the timber is possible. Shaking of the bulk causes a dislodgment of atoms from a congested area into others devoid of so much minute matter. In the majority of trees of other species (exclusive of the *Coniferae*) the fibres are generally closed up, so that this process of equalisation of contents cannot take place without tearing them, and thereby inducing scattered weaknesses.

The pits are developments between the fibres of beads of solid matter, resinous in nature. Each half presses into a side of the fibre, and thus causes a spot to shape into a hemispherical depression. These beads may dissolve

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and vanish, leaving the pits available for the passage, or formation, of other substances.

During seasoning and other treatment of spruce fir the resinous or modified contents of the fibres constitute closely packed rows of solid particles, like necklaces, and these naturally add strength and pliability to them. They serve a similar function to ball-bearing fittings in machinery, and reduce the possible effects of friction. Even on a minute scale the straining of one fibre against another, constantly repeated, must be perceptible to the surroundings. A multitude of minute weaknesses of this character would soon splinter the wood internally, and thereby render it less resistant to greater forces.

A number of resin canals pass up through the spruce fir, and are indicated by fairly large openings in cross pieces. They probably serve as buffers to the masses of fibres, and receive excess air and fluid squeezed from the other parts during bending.

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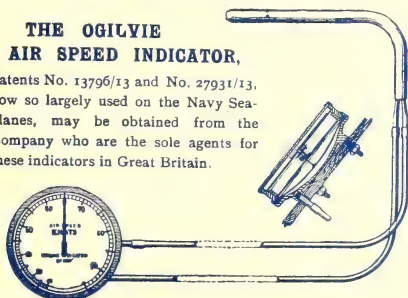
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WEDNESDAY, NOVEMBER 17, 1915

Edited by
C. G. Grey

Vol. IX. No. 20

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ON AIRCRAFT IN THE HOUSE.

On Thursday, November 11th, there took place in the House of Commons a debate of unusual importance on the subject of aircraft. With the best will in the world to save my readers from boredom I have elided a good deal of verbiage from the various speeches, but have been compelled to leave much which may seem unnecessary simply so that readers may appreciate to the full the mental attitude of those who rule or hope to rule this country. Where comment seems necessary it appears in brackets, the rest is taken verbatim from "Hansard," and where elisions have been made complete phrases have been cut out without altering the speaker's meaning and no alteration has been made in the wording.

Here follows the debate:—

Mr. JOYNSON-HICKS: I have given notice to the Ministers concerned that I propose to raise the question of the Air Service, and particularly of the Naval Air Service, in conjunction with the defence of London against air raids. I do not think I need trouble the House to-day with any observations with regard to the Military Wing of the Royal Flying Corps, except to ask the Under-Secretary of State for War whether he will bear in mind, as I am sure he will, the absolute necessity of larger machines and higher power engines being made during the coming winter. We have learned from the Field-Marshal's report how wonderfully our men in Flanders have beaten the German airmen. I venture to suggest that that has arisen not from the superiority of the machines, but from the superiority of our men. When the war began the machines we had were better than the German machines, but the information which has come to me from members of the Royal Flying Corps is that at the beginning of the spring of 1915 the German Army, having utilised the whole of the winter, brought out a new and much improved form of machine, the Albatros, with 150 or 160 h.p. Mercedes engine. I think I am also right in saying—and I will be careful not to mention any facts which might be useful to the Germans—that, while the Germans have standardised their aeroplanes and practically confined themselves to these large Mercedes engines—and the engine is a very vital part of an aeroplane—we have at the front no less than eight different kinds of aeroplane engines.

[One learns that Benz engines of 150 to 180 h.p. are largely used, and various others, including the Stahlherz, or German Gnome. The predominance of the Mercedes and Benz in Germany is about the same as the predominance of the Renault, Gnome, and Salmson in France, and of the Beardmore and Sunbeam among British engines. There are many more than eight types of aeroplanes in use by the British Army, as the Germans know very well, and there are more than eight German types also, if one reckons big and little types of Albatros, Aviatik, Fokker, D.F.W., Rumpler, Otto, L.V.G., Ago, and so forth.]

I know that we have experts of the greatest value and the greatest experience, and there seems to be no reason whatever why our men should be sent up to engage German aeroplanes in single combat in machines whose engine-power is so much less than that of the Germans. I quite realise that in many instances a small English machine has beaten and brought down a larger German

machine; but that is because of the superiority, the daring, and the bravery of our men, rather than the superiority of our machines. It is, in fact, rather in spite of the inferiority of many of our machines that these victories, which we all applaud to the utmost of our power, have been achieved over German aeroplanes in France. It is not as if we did not know what these German machines are and of what they are capable. The right hon. gentleman knows quite well that our Air Service and our anti-aircraft guns have brought down during the last few months several absolutely new and first-class German Albatros machines with these new big engines. I suggest that the right hon. gentleman—possibly he has already done it—should have some of these machines sent back here, that he should put his best experts on to them, and so arrange that when the spring, with the offensive flying weather, comes for us once more, our men in Flanders will have a fleet of aeroplanes not merely capable of attacking the Germans in single combat but capable of long-distance flights, which, so far as I can see, is what we really require to accelerate the termination of the war.

[The "experts" at the Royal Aircraft Factory tried to copy a Mercedes ever so long ago and made rather a bigger mess of it than they did of their own engine. The R.A.F. engine does at least give plenty of power till its valve-seats fall to bits, but their imitation Merc. was quite a wash-out. Moreover, there is no need for the right hon. gentleman to trouble himself about his "experts." All that is necessary is for those in control at the Admiralty to cut out official interference with design and to give the aeroplane manufacturers a free hand to build machines to fulfil certain definite tests of performance.]

With regard to the position of the Royal Naval Air Service, which is primarily responsible for the defence of London against Zeppelins, I want the House to realise that I regard the defence of London really as an incident in the work of the Flying Corps, rather than as the main object of its existence. The Royal Naval Air Service has far more important duties to perform towards bringing about the conclusion of the war than merely the defence of London. But the defence of London is a matter which must be taken in hand by the Royal Flying Corps, and I want to find out what exactly is the position of that corps, and what exactly is being done with regard to the defence of London.

[One wishes that Mr. Joynton-Hicks and other politicians would distinguish clearly between the R.N.A.S. and the R.F.C. Later on he does appear to do so, but in this instance R.F.C. seems to include both. If not, one fails to see why the R.F.C. should be dragged into these remarks on the defence of London.]

I hardly like to say it, but I want to say to my right hon. friend the First Lord of the Admiralty that the very essence of the success of the Flying Corps is that the flying officers should have the most absolute and entire confidence in their superiors; and, if he will forgive me for saying so, there is throughout almost the whole of the Royal Naval Air Service a feeling of dissatisfaction with regard to the existing organisation of that Service. I will try not to mention any names, but I

shall be delighted—it is only fair that I should—to give my right hon. friend any names for which he likes to ask me at the conclusion of the debate. Obviously, it would be improper and undesirable to mention them publicly in the House.

There is one thing I would like to mention, and that is with regard to a very eminent airman, who left the Royal Flying Corps, who has been taken on by the Royal Naval Air Service and given a very responsible position in the Dardanelles, above two men whose names are absolutely household words in this country with regard to flying. I have spoken to members of that Service back from the Dardanelles, who, while they assure me that these naval airmen who have made the Naval Air Service, as they have done, have loyally supported the new chief, and have compelled their juniors to do so, state that there is a very serious feeling because these men who have built up the Naval Air Service—whose names, if I only mentioned them, would be known to every individual in this House and out of it in regard to the success of the Royal Naval Air Service—have been superseded by, I admit, a first-rate man brought in from the Royal Flying Corps. I admit that he is a first-rate man, but he has been put above the heads of these men who went to the Dardanelles hoping, and quite rightly hoping, that they would have the development of naval flying in that part of the field of operations.

[There can be no finer reply to this than Mr. Balfour's later in the debate. It all turns on the point that a man may be a wonderfully fine pilot and as brave as a lion, and yet utterly incapable of inculcating a proper spirit of discipline and of organising anything. Which is precisely this case. Defective discipline and organisation have "made the Naval Air Service" what it is, but not as Mr. Joynton-Hicks meant. Moreover, as the R.N.A.S. in the Dardanelles is working essentially for the Army, it is almost necessary that all R.N.A.S. units should be controlled by someone who is used to the methods of the Army, though the officer in question would certainly disclaim the epithet "a very eminent airman." No sailor can be expected to be skilled in the minutiae of field reports, or the correct military routine to be followed in transmitting such reports to military headquarters. Nor can an R.N.A.S. officer be expected to recognise the fact that the smooth running of the mechanism of organisation depends on such routine. Least of all can any politician be expected even to know of the existence of such important internal mechanism, so really no one is much to blame for this unfortunate criticism of official action.]

I am afraid that I must mention one name. There is a very grave feeling with regard to the action which my right hon. friend has taken in regard to the head of the Royal Naval Air Service. There is no man who has done more to build up the Naval Air Service—I see in the House one who knows more about it than I can possibly do, and I am sure he would bear his testimony if he were to speak—than Commodore Suter. He built it up at the beginning, developed it, enlarged it, and had under his control the whole of this question of aeroplanes, airships, balloons, flying-ships [possibly a misreport for "flying-boats"], and every single development of the Royal Naval Air Service. The right hon. gentleman brought in to supersede him an admiral of high position in the Royal Navy, but, if he will forgive me for saying so, an admiral who knows nothing whatever about the Air Service. There are anecdotes going round to illustrate his ignorance of the Royal Naval Air Service when he began.

My right hon. friend told us, in answer to a question only a few days ago, that it was most undesirable to reorganise the Royal Naval Air Service during a great war. Could there be any greater reorganisation than to bring in a new and untried man, a man who knew nothing of the Service, and put him over the heads of

everybody, who had to teach him his business? He has had to learn his business. If my information be correct, he does not absolutely know it yet; it is impossible that he should. He has only been there some two months, and it is impossible for any man to learn the whole of the ramifications of the Air Service and to take control in the way the late commodore could, and did do, in that short period of apprenticeship.

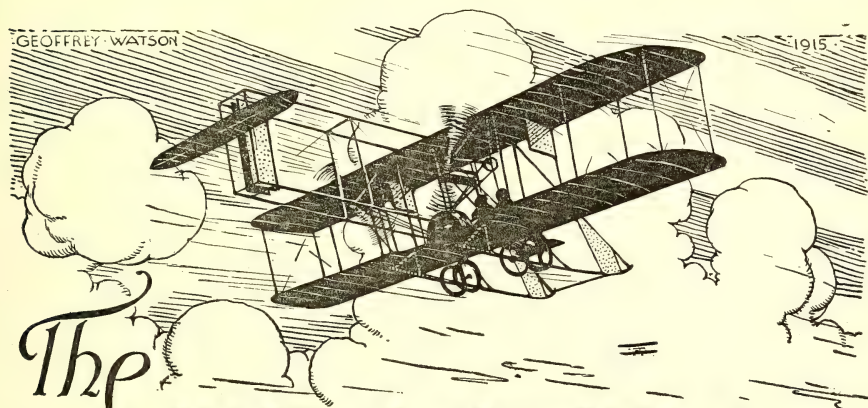
[At the same time, a naval officer fresh from naval duties may be better fitted to discipline and organise the personnel than officers who have been detached from the regular work of the Navy so long as to forget the traditions, customs, and rules of the Service.]

In this Air Service everything is passed through the Sea Lords. I again suggest to the right hon. gentleman that something might be done if he himself would take independent control of the Air Service, rather than make everything go through the First, Second, Third, or Fourth Sea Lord. The Sea Lords, as we all know, have done magnificently in regard to naval matters. But they are naval men. They are shipmen, not airmen; and there is a decided feeling in the Air Service that these Naval Lords have not that interest in this matter—that it is impossible that they should have—which the air head, whether it be the right hon. gentleman himself or somebody under him, would have. The Service should have an air head with whom they could come directly in contact, instead of through the Sea Lords.

[The term "air head" is a novelty worthy of the half-penny Press. Wooden head one knows, and pudding head, and even feather head, but air head suggests vacuity or levity to a degree which may make it quite a useful opprobrious epithet. It recalls the judge who in reproving counsel remarked: "It is no use your going on talking thus to me. What you say goes in at one ear and out at the other." Whereupon the counsel retorted: "I agree, my lord, that there does not appear to be anything to stop it." However, to take this passage seriously, one may remark that the R.N.A.S., being merely a branch of the Navy, must be dealt with as such, unless a Fifth Sea Lord be appointed to deal with its affairs.]

I may tell the right hon. gentleman—and he will correct me if I am wrong—that some two months ago an order was passed in for the building of a considerable number of large aeroplanes, such as many of us have been asking for for many months past. I am told that that order, if it has gone out yet, only went out last week. I am told that it took two months to get reports from various quarters—first from the various Sea Lords and then from the Treasury itself. The very essence of building up an air service right through the autumn or winter is that we should have it there when the spring-time comes. These two months, if my facts be correct, may possibly prove of vital importance in the spring when the Germans bring out their new Zeppelins and aeroplanes, and we have to depend upon the old and remodelled machines which we have now, and which will be repaired during the winter, instead of being able to go out early next spring with large new machines.

[Certainly the supply of aircraft is not well handled at the Admiralty, but the chief causes of delayed deliveries, and of the ordering of aeroplanes which cannot fly, are traceable to the Air Department itself, in which those officials who are supposed to specify materials, to pass manufacturers' designs, and generally to see to it that naval aviators have the right machines for their work, are not able to do the jobs allotted to them. Either they have not had sufficient workshop experience to know what is safe or what is good and what is not, or they are simply not big enough men to tackle the jobs they are set to do, and so collapse under the weight of their work. The state of affairs was just as bad before the recent changes were made, and it shows signs now of improving.]



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One of the reasons why we have seen so little of late of activity in the Naval Air Service is because of the constant changes in personnel. Again, I suggest that there has been reorganisation, but reorganisation of the most unfortunate character, in the department which corresponds with the Director of Operations in the Army. The right hon. gentleman will know, of course, which department I mean. Since the war began there have been no less than three changes. Only this week a new man—I am told by an excellent naval officer—and an untried man, has been brought into that department and placed in the position of Director of Operations. This is the very man who has to control the flying squadron, who has to decide when and what raids are to be made; who says: "Attack," "go here," and "go there." The very essence of successful Flying Corps operations is that there should be a man in the position of Director of Operations who thoroughly knows of what the air staff is capable, who knows what the machines can do, and who has the confidence of the flying men under him. Surely that is a very serious position.

[In point of fact, there should be no question of a "director of operations" in the Air Department. The Naval Air Service should be an integral part of the Fleet, and should work entirely in conjunction with it, and under the orders of a senior naval officer, subject, of course, to the said senior officer having the sense to take advice as to what an aeroplane can or cannot do. If a section of the R.N.A.S. is to conduct an operation apart from the Fleet, that operation should come into the department of the Director of Naval Operations—who is, I believe, one of the Sea Lords—and in his department there should be an R.N.A.S. officer to act as a technical adviser. The idea of the R.N.A.S. going off and conducting its own operations in its "own damned tinker fashion," as Mr. Kipling's admiral put it, is palpably absurd.]

I shall be delighted to give the right hon. gentleman names in a matter which is causing much heartburning in the Service. For instance, a certain officer was in command of a squadron so long ago as last July. He was reported by the Commodore and approved by the Naval Lords to be moved to a different place. I am told that that gentleman has an uncle in a high position at the War Office. That uncle went to see one of the Sea Lords, and that order was revoked, so that that officer might remain in his position. The Commodore actually went

so far as to put in a report to the Board of Admiralty objecting, and asking the Board whether they were prepared to support this action. I believe I am describing this matter correctly. I have been very careful in endeavouring to get at the facts, and if what I am saying is wrong I am responsible for so having put it before the House. If, however, there is any truth in that case at all, it is wrong in time of war that anything like favouritism or influence should be used in our Air Service against the opinions and decisions of the responsible heads of the Service.

[For all Mr. Hicks' indignation, I, and most other people, remain under the impression that most appointments in both Services go by personal influence more than anything else.]

Take our principal flying squadron, the squadron at Dunkirk, whence the raids usually come. We know they have machines and men. What has been done by our Naval Air Service during the last few months in Dunkirk? That force controls the coast. They have gone up to Ostend. They have flown backwards and forwards reconnoitring, but there has been no raid at all. The men are anxious to carry out air raids. They are anxious to fly over the German lines into Belgium, and even into Germany itself, but there have been during the last few months no raids at all carried out from Dunkirk. Anyone who reads the public Press will see that all the raids which have taken place during the last few months have been carried out, and very magnificently, by our Allies, the French.

[The chief reason for the absence of big bombing raids on German posts in Belgium is traceable to the interference of civilian officials with the work and workshops of aeroplane manufacturers. Raids into Germany itself are not made because Germany is too far away from any part of the British lines to be reached by any existing aeroplane carrying at the same time enough bombs to be of any use and enough petrol to bring it home again. Nevertheless, the Wing at Dunkirk has done more really solid work in the last month or two than has ever been done by an R.N.A.S. force over land.]

That is the Service to which we have to look for the defence of London. The defence of London against Zeppelins is of three kinds. It can be done either by counter-Zeppelins, by aeroplanes, or by guns. I want the House to realise the relation of the Zeppelins to these defensive forces in London. The Zeppelin incursions into London



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have merely a moral effect. There is no military effect of a Zeppelin raid on London—at all events very little, except, perhaps, in frightening the population.

[Except that they compel us to keep a large number of guns, and some aeroplanes, and several thousands of able-bodied men hanging round London doing nothing nearly all their time, when the same force could be kept quite comfortably busy at the front. If, as might well be the case, the personnel of a whole division is immobilised in this way at the cost of an occasional airship dash over London and back, it looks as if Zeppelins have quite a considerable military effect.]

But there is a vast military effect in Zeppelins in the way they are able to patrol the North Sea, and, I am told, watch our cruisers, our destroyers, and our Fleet from a vast height, and by the Marconi system of telegraphy send back full information to Germany. It has been well said that a fleet going out accompanied by Zeppelins against a fleet without Zeppelins is like a fleet with telescopes against a fleet that has none. I hate to say: "I told you so," and I am trying not to do so; but everyone knows of the efforts some of us a few years ago made in order that we should have Zeppelins constructed. I cannot help believing that the Admiralty and the advisers of the right hon. gentleman's predecessor knew that it was desirable to build Zeppelins.

I propose to read to the House a letter which I received just three years ago almost to the day. It was on November 19th, 1912. This letter was dropped by air-post in my garden in the country. It was sent by two gentlemen who were then amongst the most prominent officers in the Air Service, and who are to-day amongst the most prominent officers. It reads:—"We are most interested in the question you are going to ask in the House to-day; the Navy most certainly wants Zeppelins and we want bigger airships."

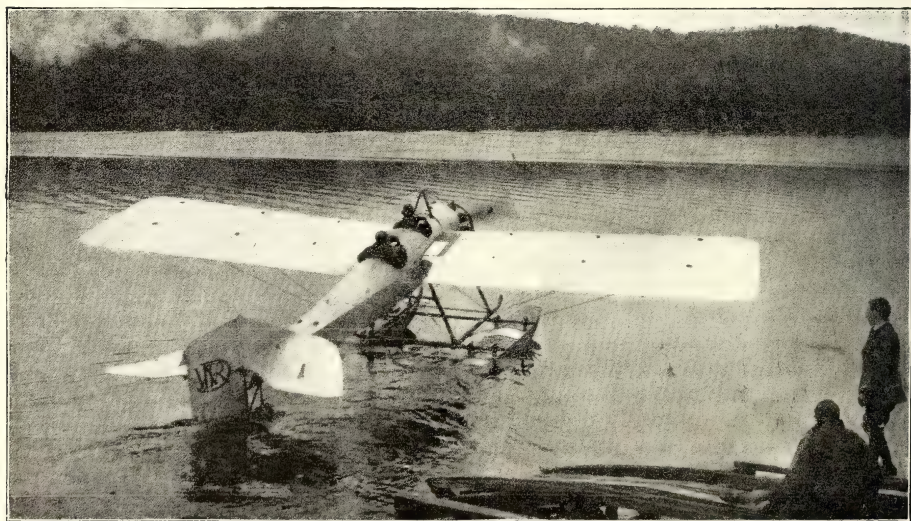
That was the opinion of two of the higher flying officers three years ago. It is impossible to believe that the Navy were not told by their flying officers: that they were not advised that it was essential to have these. The present position is like sending a destroyer against a battle-cruiser. It is no use, or very little use, sending small aeroplanes up to meet a huge Zeppelin.

[There is every use if the aeroplane pilot can see the

airship, and so the destroyer-versus-battleship simile is as wrong as it can be. But there is no use in sending up an aeroplane to chase an invisible object. That is why we need super-Zeppelins of our own, and why we are quite possibly having them before most people expect them. We do not want big airships for defence purposes. All we want is something to climb higher and fly faster than a Zeppelin, and it is not very hard to produce such an airship.]

Beyond that I want to ask the right hon. gentleman why we have no Zeppelins to-day? Why have there been no large airships built? I want also to know why the work on the English Zeppelin was stopped in January of this year by order of the Admiralty? Obviously I cannot say where the bones of that machine are, because I believe it is now being rebuilt, or the building of it continued. I will not tell the House, naturally, where it is, because I do not want to give information to the enemy; but why was this work stopped on that machine for eight months? There had been Zeppelin raids before January of this year. We knew what we were liable to; what the Germans were likely to do if and when they came here, and we might have been given one big airship which could have patrolled the Eastern shores of this country, and might perhaps at least have tackled one of the hostile airships, and might indeed have carried the war into the enemy's camp much more boldly than the aeroplanes.

Anxious questions are debated amongst the members of the Flying Corps—amongst others whether aeroplanes can or can not tackle Zeppelins. I am entitled to say this, that the Admiralty believed—I do not know whether they do so now—in tackling the Zeppelins by aeroplanes, otherwise the ex-First Lord of the Admiralty, now the Chancellor of the Duchy, would never have made that well-known remark of his about the "swarms of hornets" going up to attack Zeppelins when they came. Therefore I am entitled to say that the policy of the Admiralty was that the Zeppelins should be attacked by naval aeroplanes. Has that policy been carried out? If not, why not? The aeroplanes are there—at least, some were there. If that policy has been changed, if it is not to be done, let the right hon. gentleman say boldly that we have changed our policy and that we do not think it desirable to tackle Zeppelins by aeroplanes. Every air

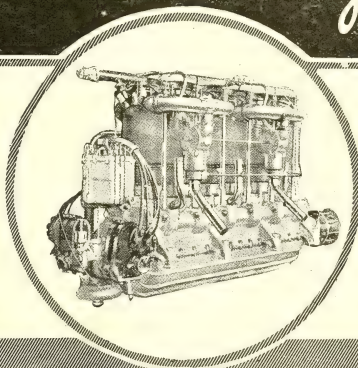


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station throughout England ought to be provided, not with one, but with an ample supply of aeroplanes in order to take the air the moment Zeppelins arrive, not merely in London, but on the shores of England.

If I may again mention a personal point—I do not know whether I ought to have done it—but a week or two ago I went down to one of the naval air stations at night to see what was the protection of London against Zeppelins. I saw several machines; some were very good ones, some were in different stages of repair. I inquired what machines were going up in the event of a Zeppelin raid. This was shortly after the last raid. I saw a machine primed to the hilt with petrol, oil, the necessary stores, and bombs. I asked, "Who is going to fly this machine?" The reply was, "If there is a Zeppelin raid the Admiralty will send a pilot down to fly it. There is no one here to fly it." "How about the twenty or thirty other machines?" I asked. "This machine will go up, and this machine only," was the reply. It would not be parliamentary, Mr. Speaker, if I repeated in this House what I said then.

Let us know there are no aeroplanes; but do not make the people of London imagine that they are going to be saved by, so to speak, the late First Lord's swarm of hornets. If they are not there, let us know it, and let us know what are the other means taken to protect us from Zeppelins.

AN HON. MEMBER: And let the Germans know!

[Apparently Mr. Hicks expects the pupils at Hendon to chase Zeppelins with box-kites. He is also evidently ignorant of the fact—judging by his sneer at Mr. Churchill—that all the best hornets retire to their nests at night and only fly in daylight. The assumption was, earlier in the war, that Zeppelins would make their raids in daylight, so as to be sure of their objectives, and would trust to their armament to repel aeroplane attacks. As it is, Zeppelins have proved much less terrible than was expected, and but for fatuous mismanagement in the Air Department they could have been beaten off by guns and searchlights as they are from Paris.]

Mr. JOYNSON-HICKS: Who is responsible? I think we are entitled to get out of this debate who is responsible for sending up the aeroplanes. I hate criticising. (HON. MEMBERS: "Oh, oh!") Indeed I do not like it; but I was brought up as the political and almost personal disciple of my right hon. friend opposite, and I would criticise him less than any man in this House; but if he will forgive me for saying so, I think his reply to me the other day, when I asked him who was responsible for sending up the aeroplanes, was perhaps hardly fair in time of war, when we, on this side of the House, claim to be as patriotic as Ministers.

Sir G. SCOTT ROBERTSON: Patriotism is on this side of the House too! [He might have said ineptitude also.]

Mr. JOYNSON-HICKS: And all that we get in answer to a query of that sort is the reply given to me by the right hon. gentleman.

The FIRST LORD of the ADMIRALTY (Mr. Balfour): Might I ask what my answer was to which he objects?

Mr. JOYNSON-HICKS (reading): "The military are responsible for military aeroplanes and the Admiralty for naval aeroplanes." (Laughter.) That is very vague. I do not know whether the Admiralty was responsible during the last raid, but I am told there was no co-ordination between the Admiralty and the War Office, and Sir Percy Scott's department. The right hon. gentleman in September said: "I have a great belief in the organising capacity, the energy and resources, and the openness to new ideas which have always characterised the distinguished Admiral who now has the defence of London immediately under his control."

Mr. BALFOUR: The gun defence.

Mr. JOYNSON-HICKS: Of course, if the right hon. gentleman says now that he meant the gunnery—

Mr. BALFOUR: There never was the least doubt as to

what Sir Percy Scott has to do. I dare say I did not say it in that particular instance, but it was always understood.

Mr. JOYNSON-HICKS: Of course, if my right hon. friend meant gunnery control, I have nothing more to say. Is the gunnery control separated from the aeroplane control? Is the aeroplane control of the Army separated from the aeroplane control of the Navy? Is there one or are there three authorities to be called into action when the next raid occurs? Because, if so, that is not what the people think or what they want. They want to recognise there is one man who will be able, not when the Zeppelins appear here, but when sighted over the North Sea, to give orders for aeroplanes to go up. On the last occasion a Zeppelin went over two of our naval stations on the East Coast and nobody went up, although they passed over there in daylight. If aeroplanes are to go up at all, surely that is the time, before the Zeppelins get near London, before they get into the darkness, when going over the North Sea, that they should go up and emulate the example of Lieutenant Warneford.

[How on earth does Mr. Hicks think an officer sitting in London can tell whether the weather is fit for flying at Yarmouth or Dover? The only person who can "order" aeroplanes to go up is the Squadron-Commander on the spot, and he already has a free hand. And does he seriously think that Zeppelins cross the North Sea in daylight at this time of the year?]

Beyond that, there is the gun defence of London. After thirteen months the Government appointed the gallant Admiral to take charge of the gunnery defence of London. Some of us who have seen some of the guns which deluded Londoners during the previous twelve months realise that there was not much wonder they did not hit the Zeppelins travelling 12,000 ft. or 14,000 ft. high on the occasion of the last raid. Around Paris they have the celebrated 75 mm. guns, mounted so as to fire straight up to a height of over 10,000 ft. They have one of these guns every 3,000 yards, and accompanying these guns is a very large and powerful searchlight—I believe 36 in. or 39 in. in diameter. That is why Paris is free of the Zeppelins.

But the defence of London does not begin here. It begins on the East Coast. If you really want to defend London, do not let the Zeppelins get near. If anybody wants to know what the defences are on the East Coast, let him go and see the defence guns there. If we only put on motor lorries the same guns as our French friends use and placed them every ten miles round the coast so as to be able to move up and down, you would catch the Zeppelins before it was dark, and I believe that, with efficient guns and efficient gunners, you would very soon bring some of the Zeppelins down. [No you wouldn't, because a 20 mile an hour motor lorry can't catch a 70 mile an hour Zeppelin even in daylight.] You cannot expect immature gunners to deal with Zeppelins at high-angle fire. I do not know whether you have sent any of our men over to Flanders to learn, or whether you have brought home from Flanders any of our men who have been shooting at much smaller targets, the aeroplanes, and brought them down time after time. Does the House realise the difference between hitting an aeroplane and hitting a Zeppelin? A Zeppelin could fill St. James' Street from top to bottom, whereas an aeroplane is only from 20 ft. to 30 ft. across, and yet our gunners bring them down—it has been mentioned in the Field-Marshal's despatches—from a height of 8,000 ft. or 9,000 ft. Put some of those men to deal with the Zeppelin defence of London, and I think we shall not have any more of these raids.

I go one step further, and say that the defence of London is not even on the East Coast. The best defence of London and the best defence of our country is an offensive against the Zeppelins and German aeroplanes in their own country. The way to root out the Zeppelins

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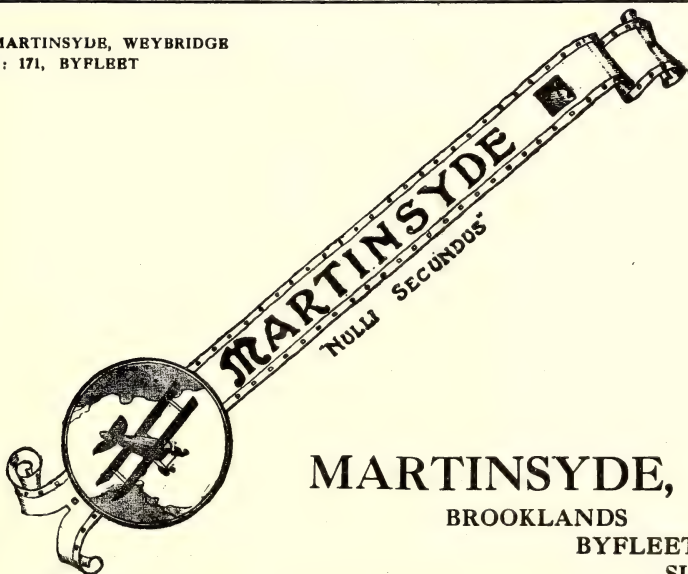
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is to root out their sheds. Everyone knows we did root them out of Belgium, their sheds being bombed by our magnificent Air Service. Two are back again. Why are our men not allowed to go again in a series of expeditions and bomb those sheds and clear them out? If you only had what we have been pleading for for so long—an adequate fleet of large and powerful aeroplanes, 2,000 if you like, divided between the Navy and the Royal Flying Corps, which would cost the price of a battleship and a half, and which would be able to drop big bombs—you would very quickly stop the German Zeppelin menace; you would very quickly make a change in the conduct of the war. At present our Naval Air Service is used for defence. I want to see it used for attack. I am rather a fighting man; I believe in attack. [And like a typical Englishman he attacks the wrong point in the wrong way.]

I believe you could root the Zeppelins out of Belgium if you had higher-power aeroplanes, and root them out from those sheds along the Rhine, and, I think, possibly root them even out of their sheds in Schleswig-Holstein. The exact number of German aeroplane sheds is known to the Admiralty. There may be some few, of course, which have been built during recent months, just as we know, of course, that Germany is building super-Zeppelins ready for next season. Let those Zeppelin sheds be destroyed, and the menace will be over. I have pleaded before for a stronger offensive in our Air Service. I believe it is quite possible. When one dreams of this hideous war, and the best way to put an end to it, one thinks of an aerial fleet the equal and the compeer of our great naval fleet in the North Sea, equal in power and numbers. It needs a man of determination and of imagination to take charge of it, to institute it, to build it, and, quite humbly, I believe we have that man in the right hon. gentleman if he would do it, if he would brush aside all preconceived ideas and make up his mind that next spring we should have a service worthy of England which would be able to destroy the German lines of communication, bomb her Zeppelin sheds—I say nothing of reprisals because I want to carry the entire House with me to-day—and you would be able to go as far as the Rhine, and even to that place which is the head and centre of the enemy, Krupp's works at Essen, and I believe with an adequate Air Service you could very largely bring this war to a speedy and victorious conclusion.

[Mr. Hicks is wrong again. Mr. Balfour's age is too great to permit him to take charge of producing a Naval Air Service such as we need. Mr. Churchill is the only man capable of building it, and he was held back just when he might almost have done it if he had been well served and wisely guided by his technical aeronautical advisers. I am not entirely without hope that Mr. Churchill may yet have his chance. It is evident from the whole of Mr. Joynton-Hicks' speech that his sources of information on technical matters are not now so reliable as they were in the days when he did so much for the R.F.C. by exposing the false statements made by the then Secretary of State for War, Colonel Seely.]

MR. LYNCH: The speech of the hon. gentleman indicates what I consider grave incompetence in a certain department of the general direction of this war. I endorse all that he says, and in one or two particulars I will help to dot the i's. But I wish to take this occasion also to raise even graver questions, but still unfortunately on the same note of incompetence. I will take this as my general theme, that we desire to win this war, that we are not winning it, and that the main fault is in the incompetence of those who are giving the direction in the highest places of command.

[Here it is necessary to cut out pages of Dr. Lynch's very able speech, as it deals with military matters. Turning to the matter of aircraft, Dr. Lynch said:—]

Let me touch on another detail, that of the Zeppelin

raider, on which we have heard an eloquent speech. These Zeppelins are no phenomena. They have been with us for months and, speaking as an engineer, I say the problem of finding a range-finder is a comparatively simple one. None has been found and the truth is that if one had been found it would have been tested by bringing down a German Zeppelin. It has not been found. No man, be he Sir Percy Scott or no matter who or how high his reputation has been beforehand, can avoid facing this issue: if he has been in that office for some weeks and has failed to find a range-finder, I say that man, again, is incompetent, and that man should go. Let that be the test. Test by results. Let us come down until we can find a man who can give us results, even if we have to cause a flutter in the dovescots, and a change in the reputations that now flaunt themselves before the world.

We had a lead in aeroplanes, and France had a lead in aeroplanes, and for a long time the Germans were behind in aeroplanes. I would still say that in the personnel we are, and France is, superior to the Germans, but I very much doubt whether we are superior in aeroplanes. The Germans were for a long time behind, behind France notably, in the construction of aeroplanes, but they brought down a Sikorski, and what did they do? They did not stare at it as a phenomenon and feel their minds waterlogged, and say it was an extraordinary thing, and no provision could have foreseen it. They photographed every part, and sent copies to every engineering shop in the empire. They then proceeded to build new aeroplanes on that model at Hamburg and Friedrichshafen, but instructed their engineers not merely to copy it, but to improve upon it, and they are now building improved aeroplanes of their own. [Dr. Lynch's ignorance is perhaps excusable, but the Germans were building big aeroplanes before they brought down a Sikorski, and one may bet that they had all Sikorski's plans before war began.]

It is a fortunate thing for this country that the Germans have been too much hypnotised by the Zeppelin idea, because had they devoted their intellectual and organising powers, wealth and skilled work to the construction of aeroplanes, their aeroplanes would have been a much more formidable menace to London than the Zeppelins have been. Indeed, the aeroplane may yet play a decisive part in bringing this war to a finish. We have time still to take the lead in this matter. We ought not to allow ourselves to be content with futile arguments of incompetent men. We ought to set-to to build an aeroplane fleet which will have such a superiority that no hostile German craft dare show its nose above the horizon. So we may gain the supremacy of the air as we once held the supremacy of the sea. Having got such a fleet, we should by continual raids destroy their aeroplane sheds, their submarine bases, and their great factories. We should use the aeroplane fleet not as an adjunct to the Army or Navy, but as a separate arm, and thus we may bring into this war something which will have a decisive influence in bringing it to a termination.

[Purely as a technical point one may explain that an adjunct to an existing Service may operate independently, and that Naval aircraft, acting under orders from the Director of Naval Operations—or lent to the Army for work under the Director of Military Operations, owing to shortage of R.F.C. machines,—may operate against German towns, apart from the operations of the Grand Fleet, just as our submarines are operating "on their own" in the Baltic and in the Sea of Marmora, or as the German submarines are operating in the North Sea, the Atlantic, the English Channel, the Irish Sea, the Mediterranean, the Adriatic, the Baltic, and the Black Sea. Therefore there is no need to separate them from the Navy or Army. They need only be treated as a new arm for those Services.]

Thomas

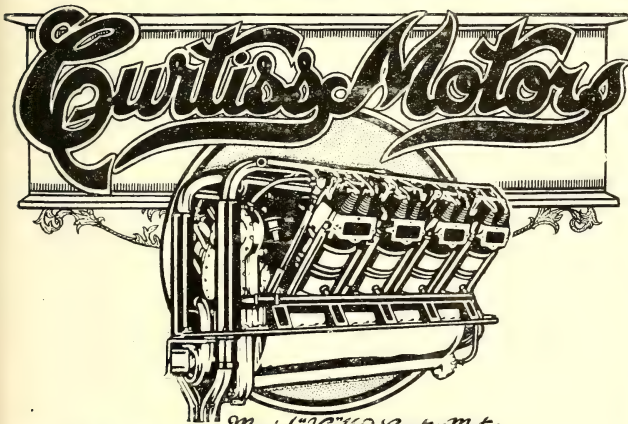
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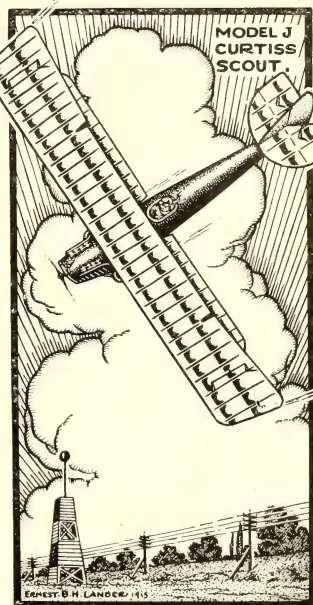
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Mr. BALFOUR, after endeavouring to defend the Government and the War Office against Mr. Lynch's cold home truths, said: The first criticism of the hon. gentleman (Mr. Joynson-Hicks), I think, was one which does not concern the Admiralty alone, but concerns both the Admiralty and the War Office. It related to the character of the aeroplanes which those two Departments are constructing. The same point was referred to by the hon. gentleman who has just sat down. There is no doubt that, as this war has gone on, there have been changes and developments in the machines of all the countries concerned. Now one has got in advance of the other; now, again, the positions are reversed. I do not think it ought to be assumed, as both hon. gentlemen appear to have assumed, that now the Germans have got a lead which it will be difficult or impossible for us to overcome.

Mr. JOYNSON-HICKS: I certainly did not say it was impossible; I hope we shall catch them up.

Mr. BALFOUR: I understand that my hon. friend and the hon. gentleman who has just sat down both desire to see that British industry and inventiveness should enable us again to take the lead which we had for a short time but which, in their opinion, we have now lost. I can assure them, so far as the Admiralty is concerned, that there is an earnest desire to improve in every way the construction of aeroplanes. They are improving. They are improving in strength, speed, engine power, and all the qualities which he desires to see, and rightly desires to see, embodied in our Air Service.

[But improvement might be doubted, and the output quadrupled, and the construction of "scrap" avoided entirely if the practical pilots of the R.N.A.S. were allowed to confer with the manufacturers on questions of design and engines, instead of leaving these essential matters in the hands of highly-paid civilian theorists and of officers whose practical flying experience is a negligible quantity. So far as the theorists are concerned, I am prepared to nominate at any moment five men from the R.N.A.S. who will do all the work on their naval pay, and do it infinitely better because they are practical men with workshop experience who know their jobs from the right end, and not from mere books.]

As regards the Army, although on that point I cannot speak with the same authority, I am confident that the Army are pursuing the same course in generous rivalry with the Navy. The two departments interchange ideas. [That will be news to most officers in both Services. The civilian experts may swap schemes for their personal advancement, but there is little "exchange" between officers.] And I believe that as the war progresses it will be found that we have not fallen behind those against whom we are matched. It is very difficult, of course, to speak on this point with confidence, because until a machine is actually in use you cannot prophesy, whether the machine belongs to your enemy or yourself, what is going to happen. Germany may have some machine under construction of which we know nothing, which may produce results we do not anticipate, and we may be producing machines of which the Germans know little. All that must necessarily, in the nature of the case, be a matter of conjecture. I can do no more than assure the House that so far as the Admiralty is concerned, and I believe so far as the Army is concerned—my right hon. friend will say something on this subject with reference to the Department he represents in this House—broadly speaking, it is fully recognised by both Departments that there is no more important and pressing necessity at this moment than to see that the machines used by the Air Service are kept at least on a level with those with whom they have to contend. [And it is so easy to do if only certain pernicious influences are removed.]

My hon. friend went on to criticise certain dispositions of personnel for which the Navy were responsible. He complained that we had sent out an Army man—a man

trained in the Army Air Service—to superintend and organise the Naval Air Service at Gallipoli, although there were men at Gallipoli, as he said, whose names were household words. It is perfectly true that there are members of the Naval Air Service at Gallipoli whose names are, and deserve to be, household words in this country. They are fliers of supreme skill and of admirable and distinguished courage. But the gentleman to whom he refers, who is now at the head of the Service in Gallipoli, was sent out not as a flier, but as an organiser. He is an admirable flier [He is not, and he would be the first to disclaim the intended compliment], but it was to organise a great Air Service at Gallipoli that he was sent out. I believe he is doing it very successfully, I believe the heroic airmen of whom my hon. friend speaks are more distinguished for their great feats of courage and skill than they are for their organising powers. The two things are quite different; they require quite different faculties. [It is comforting to find that at last someone has discovered this self-evident fact. It shows the dawn of official intelligence.]

I think my hon. friend was not well advised in criticising the Government for not having considered the special aptitudes of the men at their command in determining what places they should fill in the service of their country. All I can say is that I have done my best in this matter. I do not believe that he will find that those who look at the Air Service at Gallipoli from the outside, who consider what it has done, what it is doing and what we still hope it will do, will consider that the choice made by the Admiralty, of which my hon. friend complains, is otherwise than the choice which experience has justified. [The move was well advised in every respect, even if the selection might have been better.]

My hon. friend turned from Gallipoli to the organisation of the Air Service at home. He very rightly, I think, avoided unnecessarily dragging in names in the debates in this House. The essence of his charge was that whereas there was a gentleman at the Admiralty who up to the recent reorganisation of the Service had conducted all the departments of the Air Service with conspicuous ability, the Admiralty had now altered the system, had brought the Air Service under the ordinary Admiralty practice, put it under the Sea Lord, and had, by that very action, necessarily altered the position of the distinguished gentleman to whom he referred.

The facts are these. When the war broke out, the Air Service was relatively in its infancy. The very fact that the war broke out expanded it enormously in all directions. The distinguished officer to whom the hon. member refers was, in the first instance, an expert in lighter-than-air ships. Gradually, as the Air Service expanded, his duties expanded. To lighter-than-air were added heavier-than-air. To the design of aircraft was added the control and command of an ever-increasing and enormous staff, both designers and fliers, pilots and mechanics. He was made responsible for the most heterogeneous duties, until the weight of responsibility thrown upon him was far in excess of what any officer ought to be asked to bear. I came to the conclusion that the time had come when the Air Service ought to be brought under the ordinary Admiralty practice.

In its early days my right hon. friend (Mr. Churchill), to whom the country owes a great debt of gratitude in connection with the Air Service, kept it under his special personal charge and supervision, and I am not sure that my hon. friend (Mr. Joynson-Hicks) did not suggest that his example should be followed by me, and that I should put all the Naval Lords on one side and assume the sole management and control of the Air Service. I think that would have been a great error. Much was gained by the personal control, the personal interest, the initiative and the farsightedness of my right hon. friend in the early stages of this Air Service. But I might as well



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really keep the Submarine Service or the Destroyer Service under my own personal control. The Air Service has come to stay. [So have some of the officially tinkered aeroplanes, judging by their performances, or rather lack of performance.] It is, and it must henceforth always be, part of the Admiralty equipment, and I am confident that I was right in thinking that the time had come when the enormous expansion which it had gone through required it to be treated as other great Naval Services are treated, and put under the same machinery which experience has shown to be, after all, not a bad machinery for managing the affairs of the country.

[The ordinary Admiralty machinery is bad enough, but bad as it is it is bound to be an improvement on the chaos which has existed of late in the Air Department.]

My hon. friend had some story which I did not quite follow. I think his natural desire not to be indiscreet in public prevented my understanding the details to which he referred, but apparently he had in his mind some case in which an improvement or an invention of, I think it was, a new kind of aircraft or a better kind of aircraft, was delayed through going first to the Fourth Sea Lord, then to the Third Sea Lord, from the Third Sea Lord to the Second Sea Lord, and from the Second Sea Lord to the First Sea Lord, until months elapsed in this purely official routine. If I may say so without disrespect to my hon. friend, he really has mistaken what the Admiralty machinery is. That is not the way the discussion of any invention would be dealt with. It is not the process through which it would go, and although I do not venture to give a direct contradiction to anything my hon. friend said on that subject, because I really do not know to what he refers, I am sure the general account he gave of Admiralty procedure is not based upon any minute knowledge of the facts.

There was another matter which he raised which equally left me at the end quite befogged as to what it was he had in his mind. It was some case of a job in which, as I understand, a highly-placed official at the War Office and one of the Sea Lords were concerned, and they appear to have kept a man in a place from which, according to my hon. friend, he ought properly to have been excluded. If my hon. friend will tell me in private to what he refers, I shall be very glad to consider the matter. The House, I hope, will understand that I have not the least conception to what he refers, and it is impossible for me to deal with it in this debate.

I hope I have made it clear to the House that what happened was that the enormous expansion of the Air Service really absolutely outgrew its primitive organisation, and it had to be put under the accepted organisation of the Admiralty. I believe, contrary to what has reached my hon. friend, that it has done nothing but good. The information I had before the change was made was that in many cases there was great want of discipline in the Air Service, which was only natural, because the distinguished officer who was at the head of it really had not disciplinary powers, and the various Commanders-in-Chief round the coast had no authority over the Air Service at all. It was quite inevitable in these circumstances that there should be some relaxation of the bonds of discipline. It could not be otherwise, and it was not otherwise. I believe it was really of the greatest possible advantage to the Air Service that it should be introduced into a system which, whatever else may be said of it, has undoubtedly produced admirable fruits in the way of wise discipline. No one has ever suggested that the Navy of this country is not admirably disciplined, and to bring the Air Service under that system seems to me to be conferring on it one of the greatest possible advantages.

[The real cause of indiscipline was, first of all, the selection of some naval officers of the wrong type when the Naval Air Service was being formed. Then insufficient

surveillance was kept over these by officers at the Admiralty, with the result that they infected newly-joined junior officers and civilian entries with their own indiscipline, instead of beating them into shape. They are doubtless brave and skilful fliers, but they are not officers, and unhappily in some cases hardly gentlemen. Therefore one sees the wisdom of bringing the whole of this infected body under the comparatively healthy constitution of the "old" Navy.]

I turn from the general organisation of the Air Service under the Board of Admiralty to the particular criticisms which my hon. friend passed upon the Zeppelin attacks and the defence of London. There was one general observation which fell from my hon. friend, and also, I think, from the hon. member (Mr. Lynch). They dilate with great eloquence and force on the enormous advantage it would be to this country if we had an overwhelming force of aircraft of the latest types which we could hurl against the invader, or which would enable us to become invaders ourselves. The advantage would be enormous, I quite agree; just as the advantage would be enormous of having munitions which we do not possess. I do not speak for the Army, because the representative of the Army will speak for himself directly, but as far as the Navy is concerned, we are doing our very best to increase both the number of our fliers and the machines which they have to use. It is no use saying how much better off we should be if we had more of the things which it is extremely desirable we should have. We are making them as fast as we can. [We are not making them half as fast as we could if the technical departments were in capable hands.]

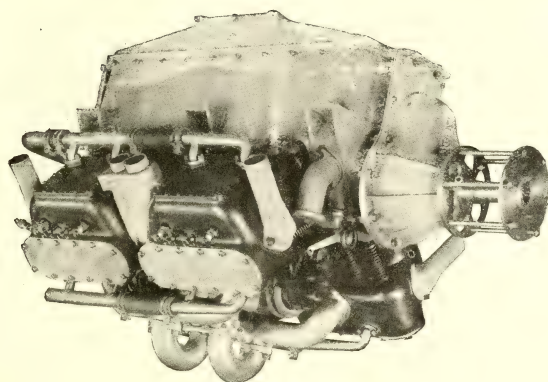
When we come to the case of Zeppelins my hon. friend said, "Will the First Lord of the Admiralty explain why Zeppelins were not built before the war, and why a Zeppelin which was being built during the war was not gone on with?" I am not going to discuss the policy of the present Board in connection with lighter-than-air craft, though I may say that we are building no inconsiderable numbers of lighter-than-air craft at this moment, largely for the purpose which my hon. friend refers to—the purpose of scouting. If he asks me why these ships were not built before he must recognise that the whole policy of Zeppelin *versus* Aeroplane is still undecided, and that the most competent people hold the most diverse views upon it. I think the hon. member (Mr. Lynch) himself took the line of saying that he did not believe in Zeppelins compared with aeroplanes, and there is a large number of great authorities who take exactly that view. No nation—I do not care what nation it is—could expand equally in every conceivable direction. You have to choose, and there are many persons—I do not say they are right: I have not an opinion—who think that Germany chose wrongly. I believe the hon. member thinks that Germany chose wrongly. If Germany chose wrongly in the matter, I hope the criticism upon the preceding Board of Admiralty will be mitigated in severity. If the Germans were wrong in putting as much energy, money, skill, invention and manufacturing power into the making of Zeppelins, do not let us criticise the preceding Boards of Admiralty because they did not fall into the same error.

[The whole point is that the Air Department had at the beginning a very limited amount of money to spend. Instead of spending it all on one big rigid airship it spent it on a few small ones and many aeroplanes. And it is a very lucky thing that it did so, because only for Admiralty orders in 1912-1913 practically all aeroplane firms would have shut up shop and then there would have been nothing left but R.A.F. designs—and, mark you, R.A.F. designs without the stimulus of competition with rival manufacturers and without goading from this paper, for THE AEROPLANE would have gone out too if the trade had expired.]

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But passing from this general question as to whether you ought to construct Zeppelins rather than aeroplanes, or aeroplanes rather than Zeppelins, I come to the more particular criticisms my hon. friend made with regard to the defence of London. With some of his observations I am in hearty agreement. I quite agree with him, for example, that the defence of London, or any other place within this island, should largely, and as far as possible, be a coast defence. It cannot be wholly a coast defence. London must have local defences as well as coast defences, but I entirely agree that we should extend the circle of our defences as far as possible, and if you can, and when you can, you should catch your Zeppelin as he approaches your shores, and I doubt not that as we get more and more of the necessary appliances for doing so we shall more and more succeed in that object. Let me add something to what the hon. member has said. Our defence against Zeppelins should not be limited by the shore, and they are not limited by the shore. You cannot have a ring of cruisers round the island, of course, but it is undoubtedly the fact that we can use, and should use, and we do use our ships of war as far as possible to anticipate and prevent attacks on the Metropolis. But all these questions of defence or gun power are limited, just as the aeroplane service is limited. It is limited by what we have got. We are making as hard as we can aeroplanes; we are making pilots and we are making guns. But we are behindhand.

We have always been behindhand in this war. It has never been denied. I am not responsible for it. That is part of what I may call the admitted commonplaces of the situation. We have not had, and we still have not, all the munitions that we shall have, or that we ought to have. Until we have them, it is impossible that we should have the defences entirely satisfactory in their character or amount. They are improving every day. They are much more formidable now than they were, and they will be much more formidable than they are.

We have never been supplied with all the guns we want. We have taken guns from the less necessary places to the more necessary places, and there are positions on ships and on land where I would like to have guns where I cannot have guns, simply because the guns are not yet there, though they will be there. The House must accept that as an unfortunate fact, which is being remedied, which has for months been in process of being remedied, is from day to day improving, and will get right, I hope, before a not very long time. I do not pretend that we have at this moment, either in London or out of London, all the guns that are desirable or necessary for its complete protection.

My hon. friend dealt with one other point. He said, "Is not your organisation for the defence of the country against Zeppelins hopelessly complicated and confused, and would not everything go on smoother if it was under one authority?" I do not think the organisation is the most perfect organisation that can be devised, but I do not quite see how you could work it with one authority. At any rate, that might not conduce to things going more smoothly.

The Navy must be concerned, however you put it, because, as I have just explained, the defence at sea is part of the defence against Zeppelins. Therefore, if everything on land is put under the Army you would still have some of your anti-Zeppelin defences under the Navy, and no conceivable arrangement will get rid of that. When you are dealing with a great area like the Metropolis you must bring in the police, the Home Office, the county council and the fire brigade, as well as the Army and the Navy. That represents a large number of separate departments. I do not think, so far as my observation goes, that this produces any real dislocation at moments of action. As regards information, the Army and the Navy are in the closest touch.

It is quite true that some of the flying stations near London are under the Army and some of the flying stations near London are under the Navy. My hon. friend, I think, was unduly sensitive as to an observation I made in answer to a question, when I said that in the case of the naval stations the Navy sent up the aeroplanes, and in the case of the Army stations the Army sends them up. It cannot be otherwise. I really do not know in what other light I could answer him. If he can suggest a kindlier form of phrase, I should deeply regret not having used it. For my own part, my linguistic powers fail under the strain of devising some better form of words. If you say, as my hon. friend desires to say, "What a monstrous system it is that there should be in the neighbourhood of London flying stations where the Army sends up the fliers, and another station in the neighbourhood of London where the Navy sends up the fliers," I am not sure that that division of authority really has the ill-consequence which my hon. friend supposes.

These stations are in the closest telephonic communication. Each knows exactly what is being done at the other stations. There is no difference of policy or principle, and there is no division of authority. There is not, and I think there can hardly be, a collision between one and the other, and in these circumstances I greatly doubt whether any of the ills that my hon. friend seems to think follows the system are really to be found. Nor do I see how he would alter that system at present. These are flying stations where training goes on. I am very much dissatisfied with the division of stations, so far as the Navy is concerned, and I am very anxious to have a much larger training school and to unify the training as far as possible in one place. I believe that would mean a great saving of expenditure, and a great increase in efficiency.

[I am not so sure about that. It might produce a stereotyped pilot. At present there is a possibility of healthy rivalry between different schools, whether civilian or Service. Also there is a danger of one "unified" school being put under a bad chief—unless of course the Navy claims for its own central school the able officer who formed and has so successfully governed the Central Flying School at Upavon, now almost entirely a Military establishment, although under a Naval officer. Even so, numerous stations would be needed as landing grounds. I admit that London, and its temptations, are not good for pupils.]

That would alter the system, no doubt, of these flying stations round London, but until the new system can be introduced the flying stations are there, and they have to be used by the Army and the Navy respectively. If we are to hand over our flying stations to the Army without having any other stations, we cannot carry on our training. I will, therefore, say that this division is an almost inevitable element in the present system. I hope, in some respects, the system will improve, but I do not think all its improvements will produce a closer co-operation and a greater harmony than now exists between the Naval and the Army Flying Corps engaged in this particular work.

I will not enter upon the vexed question of whether aeroplanes are the best defence against Zeppelins, or whether gunfire is the best defence. I believe the highest authorities on that point again differ. It must be remembered that the experience of mankind, not merely of the British Army or of the Navy, but the experience of mankind generally, is exceedingly limited upon this point, and it is quite natural that great authorities should entertain different sets of opinion. As far as we are concerned, we desire to bring both to the highest degree of perfection. We are doing all we can to increase the gun defences of London, and we certainly desire to increase also the aeroplane defences of London. But let the House always remember that we are brought up constantly by this deficiency of material and of trained men. No fairy waving of wand can put that right. It can only be put right by hard work in the departments concerned.

My hon. friend concluded with an aspiration in which I heartily sympathise with him, that the time will come when this country will be able to take the offensive in air warfare. I think he rather underrated the difficulty of doing that with aeroplanes. The aeroplane at present has not got the range which would make it possible from these shores to do anything important against our enemy. The time may come when the power of the aeroplane will so increase its length of flight, the load it can carry, and its powers of offence, that an aeroplane, starting from the shores of Norfolk, might become a menace and a terror on the banks of the Rhine. But that time is not yet, and there is no use our pretending that it is.

The hon. gentleman, I think, is under a misapprehension on one point. He seems to think that the raids lately came from Zeppelins housed and having their base in Belgium. That, I believe, is not the fact. They come from North Germany, and they come from a distance where, at present, effective attack on our part is not easy. He may rest assured, easy or difficult, that air attack is an operation of war constantly in our thoughts. It will always be a matter of difficulty and peril, and I doubt not for the very reasons he gave.

My hon. friend, in the earlier part of his speech, dwelt upon the way in which Paris had been made secure by the very large number of 75-centimetre guns ranged around the city. As aeroplanes increase in power, guns increase in precision, and increase in numbers, and the skill of those who use the guns increases also, and I am not sure that it will ever be possible for one country to have such a fleet of aeroplanes as to allow them to attack successfully such a place as Essen. It might be so, and I live in hopes that it may be so. If it is impossible to defend Essen, I would suggest that it cannot be very easy to defend London. The area of London—I forget how many square miles it is—is, I think, between forty and fifty square miles.

Sir E. CORNWALL: The area of the County of London is 118 square miles.

Mr. BALFOUR: Essen is a great manufacturing centre,

but it does not rise to that. If, in the hon. gentleman's view, it is possible for us to create aircraft to destroy Essen, it cannot be difficult for the Germans to create aircraft which will cause loss and suffering and destruction in London. However, we need not look forward to developments which it is impossible to foresee with accuracy. Let us deal, to the best of our ability, with the problems of the moment.

As to the character of those problems I am in entire harmony with my hon. friend. I think that the duty of the Admiralty is to develop to the utmost the number of their aeroplanes, the power of their aeroplanes, and the number and the skill of the pilots who have control of them. I think it is the duty of the Admiralty to develop to the utmost the gun protection of London, whether at the coast or whether in London itself, or whether on board ship. These problems are obviously novel, they are complex and not easy of solution, but they are constantly before the Board of Admiralty.

I hope the country may rest assured that whatever can be done by the Board of Admiralty will be done, and I am quite certain that the energies of that Board will not be wanting in carrying out all that may be required in the defences of his Majesty's Dominions.

[Mr. Balfour is to be congratulated on his speech, which shows a comprehension of his subject far greater than he had when he first spoke on aeroplanes, and actually greater than those of his critics. Evidently those at the Admiralty who are responsible for the much-needed re-organisation of the Air Department know their jobs and had succeeded in putting the First Lord up to all the points he was likely to meet in debate. Such efficiency in this respect gives one hope that equal efficiency may be shown in other ways, and that there may soon be a wholesale clearing out of all those who have hampered progress in personnel and matériel ever since pressure of war work made it impossible to keep them under the strict supervision which was necessary. The auguries are good for the future of the R.N.A.S. Let us hope they may be fulfilled.—C. G. G.]

The Death of Lt.-Col. J. D. B. Fulton, C.B., R.F.A.

The greatest calamity the Royal Flying Corps has ever suffered befel it on November 11th, when Colonel Fulton, the newly-appointed Assistant Director of Military Aeronautics, died. He was in his office in the morning, and, feeling unwell, went to see a doctor, who told him that an operation on his throat was necessary at once. Another doctor was called in consultation, but despite their ministrations he died the same evening.

John Duncan Bertie Fulton was born on July 23rd, 1876, at San Francisco, the son of the late Frederick George Fulton. He entered the Royal Artillery in March, 1896, and served throughout the South African War, where he took part in the operations for the relief of Ladysmith, including the action at Colenso. He was also present at the actions of Spion Kop, Vaal Kranz, Tugela Heights, Pieters Hill, and Laings Nek. He was mentioned twice in dispatches and received both the King's and Queen's medals with eight clasps.

Either late in 1909 or early in 1910, being then a Captain, R.F.A., he bought a 28-h.p. Blériot monoplane out of the proceeds of sundry patents for the improvement of field-guns, for which patents he was paid by the War Office, and during that year he continued to fly and experiment at his own expense, keeping his machine in a shed at Lark Hill, on Salisbury Plain, as his battery was stationed at Bulford.

He took his certificate, No. 27, on an historic old Farman biplane, belonging to Mr. G. B. Cockburn, who was at the time also experimenting at Lark Hill. This machine, which was nicknamed "the Father of all Farman's," was the first machine M. Henri Farman ever built

and had been flown by Mr. Cockburn at the great Reims Meeting of 1909, and at Wolverhampton and Bournemouth in 1910, and on it several of our earliest aviators were trained.

Captain Fulton's "ticket" was passed by the Royal Aero Club Committee on November 15th, 1910, and he was the first British officer on the Active List to pass for his certificate.

In 1911, when the Air Battalion, Royal Engineers, was formed, he was appointed to command No. 1 Aeroplane Company at Lark Hill, his flying officers being Captains—now Lieuts.—Colonels—Burke and Brooke-Popham, and Capt. Loraine, who was killed at Lark Hill, and Lieuts.—now Majors—Connor and Hynes, both Gunners, and now commanding squadrons on active service.

About this time there was much discussion as to whether the business of flying should become a separate branch of the Army, or whether it should be a mere section of the Sappers. Captain Fulton held strong views on the subject, as befitted one of his mental ability, and did not hesitate to speak his mind in high places, despite the fact that certain officers who disagreed with him were better placed to use influence in their own direction.

Unfortunately the views expressed by me at that time, and derived from widely diverse sources, happened to coincide very closely with those expressed by Captain Fulton, and as we were known to be on speaking terms, it came to pass that undeserved suspicion fell on him as the instigator of the newspaper agitation of the period which I was known to be engineering. It turned out that our views were absolutely correct, and that military aviation

developed along the lines we advised, but I am convinced that suspicion, possibly aroused by jealous contemporaries of his, prevented him from attaining to the position to which his high ability and wide experience entitled him. It was only after years of loyal and devoted work, performed under circumstances which would have driven many a smaller man back to his own regiment, that Captain Fulton began to come into his own.

One of his earliest activities in the Air Battalion was a trip to Paris, where he bought for the Army a new type Henri Farman biplane, and also one of those extraordinary "girder-work" Paulhan biplanes, which he alone of British pilots ever flew. Thereafter he continued his routine work, inculcating into his aeroplane company a high sense of discipline and turning his engineering ability to good account in promoting efficiency in the workshops. To his early work in these respects may be traced the efficiency and organisation which characterised the R.F.C. at the outbreak of war.

In May, 1912, he was appointed to the newly-formed Central Flying School as an Instructor, and was put in charge of the workshops, where he did for the mechanical side of the R.F.C. much what Major Trenchard, D.S.O.,—now a Brigadier-General, a C.B., and an Aide-de-Camp to the King—did for the personnel, both officers working effectively together under the able direction of Captain Godfrey Paine, C.B., M.V.O., R.N. During this period Captain Fulton was graded as a Squadron-Commander with temporary rank of Major, and not long afterwards attained to substantive rank of Major in the Gunners.

In December, 1913, he became Chief Inspector of Material, R.F.C., and for his services was given a C.B. In 1914, the Aeronautical Inspection Department was formed and placed entirely under the control of Major Fulton, who was then graded as Wing Commander with rank as temp. Lieut.-Colonel. To the building up and organising of this department he devoted himself with all his great ability and energy, working for hours every day which would put to shame any ordinary man's idea of work. The A.I.D. was his own child and he had a free hand in it. He knew that here was his chance not merely to make his reputation, for few men have had less personal ambition, but to do work which if properly begun would remain as a pillar of strength to the Army. He succeeded admirably, and in his work he was loyally assisted by his former fellow experimenter, Mr. G. B. Cockburn, and by Capt. Bagnall-Wilde, R.E., who control the aeroplane and engine departments respectively.

The A.I.D. has from its inception been one of the few bright spots in the conduct of the war, and this because it started with the right men at its head, and because the man at the head of it all welcomed criticism instead of taking it as an insult, as do most servants of the State.

Colonel Fulton's good work at the A.I.D. was, happily, recognised by the War Office, and only a week or two ago he was appointed Assistant Director of Military Aeronautics, a post in which he could have put the whole of the R.F.C. under still greater obligations to him, for in controlling the matériel of the Corps he would by his own peculiar methods have produced precisely the machines and engines which are so much needed.

IN MEMORIAM.

The following announcement appeared on November 11th:—

WHITE.—On November 9th, at Old Sneed Park, Bristol, Caroline Rosena, wife of Sir George White, Bart. No flowers, by request.

Lady White was well known to many of the pioneers of aviation in this country, for in the early days of the Bristol Company she often accompanied Sir George to the firm's aerodromes at Salisbury Plain and Brooklands. Her interest in flying was keen, and one has vivid memories of

Knowing him of old as a man whose honour and sincerity were beyond question, designers and manufacturers would have worked for him as they would have worked for no one else, and he would have got what he wanted without anyone fearing that when he asked for information that information was merely required that it might be handed over to Government officials for their further glorification. Where Colonel Fulton was concerned aircraft manufacturers trusted him implicitly.

When he was appointed A.D.M.A. his place at the A.I.D. was filled by Major W. D. Beatty, R.E., another of the very earliest of military aviators, and an engineer of high ability. He is a man after Colonel Fulton's own heart, an untiring worker, and one whose whole existence is wrapped up in the good of the Service. One may assume that the appointment was made by Colonel Fulton, and one hopes that the loyalty won by the dead officer among his subordinates may be accorded to his successor. In no better way can the personnel of the A.I.D. prove their attachment to their late chief. One can only hope that an equally efficient officer may be found to fill the important post of A.D.M.A.

Whether on duty or off Colonel Fulton possessed one of the most winning personalities ever given to man. The gentleness of his manner deceived some people into believing that he was not a strong man, but when they came up against him mentally or physically they found how strong he really was. He won more than he conquered in his all too short life, but he conquered when need arose. He was too big a man to succeed without making enemies, but those who disliked him are of the sort whom one would prefer not to number among one's friends. One of the best tests of an officer is the way in which he is regarded by his men, and Colonel Fulton's men, whether Gunners, R.F.C. mechanics or A.I.D. inspectors, worshipped him.

Despite his capabilities as an engineer and as an organiser, he was an absolute sportsman. Though he never indulged in trick flying, he handled an aeroplane beautifully, he was a fine horseman—and looked it—and he drove a car with the neatness and skill which only comes from perfect hands and judgment. His sense of humour was of the keenest, perhaps too keen to permit him ever to reach the highest places, but it made life happier for him, and it certainly made it much happier for his friends. In appearance he was the ideal soldier, always perfectly turned out, yet always workmanlike and without a trace of the foppishness which might have been excusable in one so favoured by Nature.

Personally he would have liked to have waded into the war as a fighting man, and he did so far give way to his instincts as to make a trip or two to France by air, but he resigned himself to doing the job in which he was most useful, and he died in harness, like a good soldier and as he would have wished.

The newer officers of the R.F.C. know little of him personally, for his department was somewhat remote from their personal ken, but every pilot may feel that he owes his safety in the air to Colonel Fulton's work. If the younger generation can produce so gallant a gentleman it is indeed highly favoured.—C. G. G.

her watching hour after hour the manoeuvres of the Bristol pilots over the Plain, and of the kindly hospitality she dispensed to fortunate guests at the open-air parties over which she presided so gracefully at the sheds.

Lady White was an ardent supporter of the Red Cross Society, and of other philanthropic work, not only in Bristol but all over the country. Her private charity was also great, and her death will be a severe personal loss to many in Bristol.

To Sir George White, Mr. Stanley White, and Mr. Herbert Thomas one offers not only one's personal sympathy, but the sympathy of all those concerned with British aviation.

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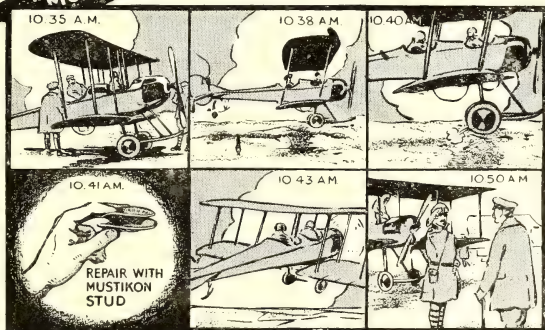
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From the "London Gazette," November 9th, 1915.

ADMIRALTY, November 5th.

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. have been confirmed in rank of flight sub-lieut.: P. Roach-Pierson. May 12th. H. K. Thorold. May 25th.

Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut. for temp. service: E. A. Pearson. March 31st. J. G. Struthers. April 6th. A. E. Hawker. June 13th. J. B. Cussen. June 21st. A. M. Blake. June 25th. H. R. C. Dewes. June 26th. W. T. S. Williams. July 11th. C. H. Brinsmead. July 11th. C. W. Elliot. July 11th. N. G. Stewart-Dawson. July 18th. G. W. R. Fane. July 22nd. S. A. Turpin. July 22nd. C. T. Freeman. July 24th. F. N. Halstead. July 26th. M. J. G. Day. August 21st. L. de B. Daly. August 21st. A. F. Buck. September 4th. W. E. Gardner. September 4th. C. W. Jamieson. September 11th.

Proby. Flight Sub-Lieut. L. Morgan confirmed in rank of flight sub-lieut. June 8th.

Actg. Flight Lieut. F. J. Rutland confirmed in rank of flight lieut. May 30th.

WAR OFFICE, November 9th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Com.—Lt. Maj. J. H. W. Becke, Notts and Derbys., from sqdn. com., and to be temp. lieut.-col. whilst so employed. November 1st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: D. Easdale, G. D. Pidgeon, T. W. Webb, W. J. King, F. S. Creswell, B. V. Grealy, C. St. Noble, H. M. Fulton, P. P. Eckersley, G. D. Hannay, P. K. Turner.

* * *

From the "London Gazette" Supplement, November 10th, 1915.

WAR OFFICE, November 10th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—October 26th: Temp. Lieut. G. H. Hall, Welsh H. Yeo.; Sec. Lieut. C. H. Jenkins, R. Sussex, S.R., and seconded; Sec. Lieut. T. Marburg, S.R.

MEMORANDA.—To be temp. sec. lieuts. for duty with Royal Flying Corps.: L.-Cpl. H. B. Stubbs, 19th Hussars. August 2nd. Pte. R. F. Wills, A.S.C. August 4th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: F. G. M. Williams, T. Marburg.

To be sec. lieuts. (on prob.): M. A. Shephstone. October 1st. R. True. October 10th. W. J. Hewitt. October 11th. W. E. Marsden. October 16th. E. G. Landon. October 17th. . October 18th: R. W. Heath, J. R. B. Savage.

* * *

From the "London Gazette" Supplement, November 11th, 1915.

WAR OFFICE, November 11th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Coms. and to be temp. Capts. whilst so employed: Lieut. H. C. Tower, S.R. October 19th. Temp. Sec. Lieut. E. D. Horsfall, Gen. List. October 28th.

Flying Officers.—October 27th: Sec. Lieut. A. W. H. James, 3rd Hrs., and seconded; Sec. Lieut. S. T. Ravenscroft, Lancs. Hrs. Yeo.; Sec. Lieut. F. D. Pemberton, R.A., and seconded. October 28th: Sec. Lieut. F. Fernihough, R.F.A., T.F.; Sec. Lieut. J. S. Castle, S.R.; Sec. Lieut. A. Charig, S.R.; Sec. Lieut. E. H. Pullinger, S.R.; Sec. Lieut. E. A. Caye, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: J. S. Castle, A. Charig, E. H. Pullinger, E. A. Caye, E. Taylor, W. Hart, K. P. MacNamara, B. W. Watts, C. Fergusson, F. Shumaker, E. Powell, A. Heywood, I. O. Griffith.

From the "London Gazette," November 12th, 1915.

ADMIRALTY, November 10th.

Proby. Flight Sub-Lieut. G. E. Baxter this day reinstated in R.N.V.R. as temp. sub-Lieut., with seniority of June 10th.

ROYAL NAVAL AIR SERVICE.—Granted temp. comms. as flight sub-lieut.: Lt. W. M. Lloyd, A. W. Cassy. September 15th.

November 11th.

ROYAL NAVAL AIR SERVICE.—Proby. Flight Sub-Lieut. C. H. Hayward confirmed in rank of flight sub-lieut. August 30th.

WAR OFFICE, November 12th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Coms. to be Sqdn. Coms.—October 27th: Maj. F. W. Richey, R.A. And to be temp. majs. whilst so employed: Lieut. (temp. Capt.) C. W. Wilson, Seaforth H.: Capt. A. E. Borton, D.S.O., Royal H.; Capt. R. M. Rodwell, W. Yorks.; Capt. W. R. Freeman, Manch.

Wing Adjt.—Temp. Capt. F. C. Shelmerdine, Yorks., and transfd. to Gen. List. November 1st.

Flying Officers.—October 21st: Temp. Capt. Right Hon. A. T., Lord Lucas, Hants Yeo.; Temp. Sec. Lieut. G. Osmand, Ox. and Bucks L.I., and transfd. to Gen. List; Temp. Sec. Lieut. R. L. Johnston, R. A., and transfd. to Gen. List; Temp. Sec. Lieut. H. R. Hele-Shaw, R.A., and transfd. to Gen. List; Sec. Lieut. E. L. Crowe, E. Kent, S.R., and seconded; Temp. Sec. Lieut. C. H. R. Johnstone, Yorks., and transfd. to Gen. List; Temp. Sec. Lieut. E. D. Johnson, E. Surrey, and transfd. to Gen. List; Temp. Sec. Lieut. L. E. Eeman, R.F., and transfd. to Gen. List; Sec. Lieut. E. R. Vaisey, Essex, and seconded; Sec. Lieut. A. F. Brooke, 10th Hrs., and seconded; Sec. Lieut. G. P. S. Reid, Seaforth H., and seconded. October 30th: Lieut. E. R. Pretymann, Som. L.I., and seconded; Sec. Lieut. E. Cameron, Staffs Yeo.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: F. W. Day, J. P. Rowell.

* * *

From the "London Gazette" Supplement, November 13th, 1915.

WAR OFFICE, November 13th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): W. Boag. October 27th. H. Jameson. October 30th. E. Bush. October 31st.

CORRECTION.—SPECIAL RESERVE OF OFFICERS.—ROYAL FLYING CORPS.—MILITARY WING.—Surname of Sec. Lieut. (on prob.) I. O. Griffith as now described, not as in "Gazette" of November 11th.

* * *

From the "London Gazette" Supplement, Nov. 15th, 1915.

WAR OFFICE, November 15th.

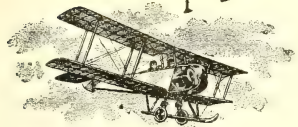
REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Coms. to be Sqdn. Coms. (and to be temp. majs. whilst so employed).—October 27th: Lieut. (temp. Capt.) E. L. Conran, 21st Lrs., and retain appt. at Central Flying School. Lieut. (temp. Capt.) G. F. Pretymann, D.S.O., Som. L.I., and retain appt. at Central Flying School.

Flight Com.—Capt. J. Valentine, S.R., from an eqpmt. officer, and retain temp. rank whilst so employed. October 15th.

Flying Officers to be Flight Coms.—November 5th: Capt. A. C. Boddam-Whetham, A. and S.H., S.R.; Capt. P. C. Maltby, R. Welsh F.; Capt. L. Jenkins, Dorsets, R.G.A., T.F.; Lieut. R. R. Smith-Barry, S.R., and to be temp. capt. whilst so employed; Lieut. E. K. Davies, S.R., and to be temp. capt. whilst so employed.

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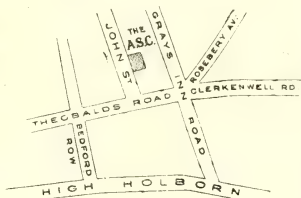
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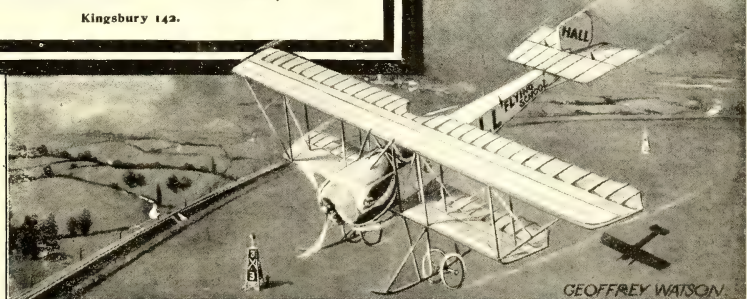
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Eqpmt. Officer.—Capt. Lord R. E. Innes-Ker, I. Guards, S.R., from a wing adjt. October 15th.

Flying Officers.—October 28th: Sec. Lieut. H. Kirby, E. Kent, and seconded. Sec. Lieut. T. M. B. Newton, R. Berks., and seconded. Sec. Lieut. W. A. C. Morgan, W. We'sh, and seconded.

Asst. Eqpmt. Officers.—August 13th: Qmr. and Hon. Lieut. J. E. Parkin, R. Flying C.; Qmr. and Hon. Lieut. J. Mead, R. Flying C.; Qmr. and Hon. Lieut. W. J. Waddington, R. Flying C. August 23rd: Sec. Lieut. G. Somers-Clarke, S.R.; Sec. Lieut. N. Fellow, S.R.; Qmr. and Hon. Lieut. W. Thomas, R. Flying C. August 29th. Sec. Lieut. E. A. Richards, S.R. August 31st. Sec. Lieut. I. O. Griffith, S.R. September 6th. Qmr. and Hon. Lieut. G. Laing, R. Flying C. September 21st. Sec. Lieut. B. May, S.R. September 24th. Temp. Lieut. C. W. M. Ludgate, Gen. List. September 27th. October 1st: Sec. Lieut. P. P. Eekersley, S.R.; Sec. Lieut. P. K. Turner, S.R.; Sec. Lieut. T. W. Webb, S.R. October 8th: Sec. Lieut. H. R. Vagg, Som. L.I.; Sec. Lieut. T. F. Bullen, Som. L.I.; Sec. Lieut. R. S. Rumbold, Som. L.I.; Temp. Sec. Lieut. N. L. Robertson, Gen. List. Sec. Lieut. Lord H. R. H. Gascoigne-Cecil, S.R. October 15th. Temp. Lieut. E. G. Toye, D.C.L.I., and transf'd. to Gen. List. October 16th. October 20th: Sec. Lieut. A. C. Gilling, S.R.; Temp. Capt. A. G. Parsons, R.A., and transf'd. to Gen. List. Temp. Capt. H. D. Dryden-Smith, Durham L.I., and transf'd. to Gen. List. October 21st. Sec. Lieut. S. S. Nevill, S.R. October 22nd. October 23rd: Capt. C. H. Rowe, R. of O.; Sec. Lieut. W. J. King, S.R.; Sec. Lieut. W. J. Shields, Essex, S.R.; and seconded; Sec. Lieut. D. Easdale, S.R.; Sec. Lieut. G. D. Pidgeon, S.R.; Sec. Lieut. B. V. Grealy, S.R.; Sec. Lieut. F. S. Cresswell, S.R.; Sec. Lieut. C. St. Noble, S.R.; Sec. Lieut. F. G. M. Williams, S.R.; Sec. Lieut. H. M. Fulton, S.R.; Sec. Lieut. G. D. Hannay, S.R. Sec. Lieut. R. Groves, S.R. October 25th. October 26th: Sec. Lieut. E. Taylor, S.R.; Sec. Lieut. W. Hart, S.R.; Sec. Lieut. K. P. MacNamara, S.R.; Sec. Lieut. E. Powell, S.R.; Sec. Lieut. F. Shumaker, S.R.; Sec. Lieut. C. Fergusson, S.R.; Sec. Lieut. B. W. Watts, S.R.; Sec. Lieut. A. Heywood, S.R.; Temp. Sec. Lieut. T. C. Daniell, Gen. List. October 29th. October 30th: Sec. Lieut. F. W. Day, S.R.; Sec. Lieut. J. P. Rowell, S.R.

MEMORANDA.—Norman F. W. Rockey to be temp. Sec. Lieut., for employment with the Royal Flying Corps. October 14th, 1915.

NAVAL.

The following appointments were notified at the Admiralty on November 9th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieut., R.N.V.R., D. M. West, Messrs. H. R. Aird, C. E. Burden, and A. B. (R.N.V.R.) H. A. Pailthorpe entered as proby. flight sub-lieuts., for temp. service, and appointed to the "President," additional, for R.N.A.S., all to date November 8th.

The following appointments were notified at the Admiralty on November 10th:—

ROYAL NAVAL AIR SERVICE.—Mr. F. V. W. Cook appointed a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date November 8th.

The undermentioned have been granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., all to date November 11th: C. L. Haime, E. McD. Wright, L. H. Slatter, H. A. Beckenham, and N. W. Frames.

The following have been entered as proby. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., all to date November 8th: O. M. Ayrton, T. C. W. Selby-Lowndes, J. Ree, J. Taylor, and H. T. Jones.

The following appointments were notified at the Admiralty on November 12th:—

ROYAL NAVAL AIR SERVICE.—Lieuts.—R.N.V.R. (Temp.), J. B. Soames and C. N. R. Wright promoted to the rank of temp. lieut.-coms., R.N.V.R., both with seniority, November 10th.

Lieut. R.N.V.R. (Temp.) G. G. McHardy entered as proby. flight sub-lieut. for temp. service and appointed to the "President," additional, for R.N.A.S., to date November 11th.

Sub-Lieut. R. M. S. Veal promoted lieutenant, with seniority, November 10th.

Sub-Lieuts. (Temp.).—T. B. Ross, N. R. Fuller, A. Douglas, R. Verey, A. N. Mansergh, F. M. Michell, W. C. W. Ingle, T. R. Johnson, and S. J. Hanna promoted temp. lieuts., all with seniority, November 10th.

Messrs. F. J. McConnell, John I. Carlin, John A. B. Ball, John E. Barrs, and L. Whitworth entered as proby. flight sub-lieuts. for temp. service and appointed to the "President," additional, for R.N.A.S., to date November 13th.

* * *

The following appointments were notified at the Admiralty on November 13th:—

ROYAL NAVAL AIR SERVICE.—Mr. V. A. F. Bellamy granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date November 12th.

Temp. Sub-Lieut., R.N.V.R., J. G. Currie, promoted to temp. lieut., R.N.V.R., with seniority September 1st.

Flight Sub-Lieut. H. F. Towler promoted to flight lieut., with seniority October 5th.

Mr. G. B. Taylor entered as proby. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 14th.

Temp. Flight Sub-Lieut. A. J. Whetnall transferred to permanent list of R.N.A.S.

* * *

The Secretary of the Admiralty announced the following casualties on November 9th under date November 7th:—

INJURED.

Flight Lieut. Harold F. Towler, R.N.

Flight Sub-Lieut. Frank S. McGill, R.N.

* * *

The Secretary of the Admiralty announced the following casualty on November 13th:—

DROWNED.

Reported under date October 18th: Flight Sub-Lieut. John T. Bone, R.N.

Flight Sub-Lieutenant John T. Bone, R.N., received his commission as temporary flight sub-lieutenant on March 21st of this year.

MILITARY.

The following passages in the telegraphic despatch, dated General Headquarters, 7.20 p.m., on November 10th, from Field-Marshal Sir John French, refer to aircraft:—

On the 7th inst. our aeroplanes bombed some German hutments, apparently with good effect.

As the result of a protracted air fight on the same day a German machine was overturned and fell inside the enemy's lines from a height of 7,000 feet.

In another fight near Douai we lost an aeroplane.

* * *

The following casualties in the Expeditionary Force are reported from General Headquarters under date November 5th:—

WOUNDED.

Ryan, Capt. C. E., R.F.A., attd. Royal Flying Corps.

MISSING.

Robinson, Sec. Lieut. J. B., Royal Flying Corps.

The following casualties in the Expeditionary Force were reported on November 13th, under date November 8th :—

KILLED.

Harvey, Lieut. G. F., R.F.A., attd. Royal Flying Corps.
McConnochie, Sec. Lieut. W. J., Royal Flying Corps.

MISSING.

Adams, Capt. T. D., R.F.A., 1st West Lancashire Brigade (T.F.), attd. Royal Flying Corps.

Le Bas, Lieut. O. V., R. West Surrey Regt. and Royal Flying Corps.

Lieutenant Gerald Franklin Harvey was born in March, 1893, and entered the Royal Artillery from the Special Reserve in December, 1913. He was promoted in June of this year, and was attached to the Royal Flying Corps.

Mr. Harvey was educated at Lancing College. He was 22 years of age.

Second Lieutenant W. J. McConnochie entered the R.F.C. Special Reserve in April of this year, and was gazetted second lieutenant in July.

Mr. McConnochie was the only son of the late Mr. Thomas McConnochie, agent of the Royal Bank, at Ayr. Educated at Ayr Academy and Merchiston Castle School, Edinburgh, he became an engineer, and two years ago took a partnership in a motor business in Leeds. When war broke out he went to Hendon to learn aviation, and after getting his certificate, received a commission.

The following appeared in the casualty list published on November 15th :—

PRISONER OF WAR.

Burnie, Sec. Lieut. A. I., 8th Buffs, attd. Royal Flying Corps.

FRANCE.

It was reported on November 11th that General Hirschauer, the ex-Chief of Military Aeronautics in France, had been wounded by the bursting of a shell. He has been mentioned in despatches.

GERMANY.

The German Headquarters' report of November 10th, as received by "Wireless" and therefore possibly unreliable, contains an announcement from Sofia saying :—

"The Zeppelin airship which ascended at Temesvar with the Duke of Mecklenburg on board has landed in Sofia. King Ferdinand and his Court witnessed the landing."

The communiqué of November 12th says :—
Western Theatre of War.—Nothing new. In an aerial fight two English biplanes were shot down and a third obliged to land behind our front.

ITALY.

The communiqué of November 9th says :—

There has been increased artillery activity along the Trentino frontier, and aeroplanes are also more in evidence on both sides. On the night of the 8th, one of our dirigibles, rising above a thick bank of clouds, reached the district between the Isonzo and the Vipacco. The airship subsequently came out of the clouds near Savogna, and was discovered by the enemy's searchlights. Anti-aircraft guns fired at her, but she got away and returned safely.

The communiqué of November 10th says :—

Yesterday our aircraft bombarded the railway stations of San Daniele and Nabresina and other military objectives on the Carso plateau.

The communiqué of November 16th says :—

Our aviators on Friday under adverse atmospheric conditions made successful raids on the Carso plateau, bombing the stations at Refenberg, San Daniele, and Doltoliano, and long trains standing in them.

An enemy Albatros and an Aviatik were met in the course of the raid, and put to flight by the fire of our machine-guns. Our aviators returned safely.

* * *

It was officially announced from Rome on November 15th that at 8.30 a.m. two Austrian aeroplanes dropped bombs on Brescia, killing seven people and wounding ten.

AUSTRIA.

The communiqué of November 10th says :—

Several civilians, including one woman and two children, were killed by air bombs dropped on Nabresina.

* * *

The communiqué of November 15th says :—

One of our aerial squadrons recently bombarded Verona.

THE R.N.A.S. COMFORTS FUND.

Mrs. Sueter says that the number of R.N. air stations is so large that the task of supplying sufficient comforts is something appalling, and she hopes that readers of this paper will do all they can to help her.

This week consignments of garments, etc., have been sent to Nos. 6 and 8 Kite Balloon Sections on active service, and to two airship stations at home. It should be noted that all khaki garments are as acceptable as blue.

Unfortunately it is only possible to acknowledge one contribution this week, 10s. 6d. from H. V., bringing the total to £1,260 7s. 7d. It is to be sincerely hoped that it will be possible to acknowledge a far greater amount next week. Contributions should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

FOR PRISONERS OF WAR.

Lady Helmsley and Mrs. Rowton acknowledge with thanks the following contributions for prisoners of war in Germany :—From the employees of Vickers, Ltd., Weybridge, £10 1s. 6d.; from the employees of Vickers, Ltd., Bexley Heath, £2 14s. 3d.

MR. CHURCHILL'S RETIREMENT.

The resignation of Mr. Churchill from the Cabinet is a matter on which he is to be congratulated. The nation has been recently deprived for the time being of the services of two of its most able and energetic leaders, but when such fighting men as Sir Edward Carson and Mr. Churchill are at liberty as ordinary members of the House of Commons to criticise the actions of the Government, or to work out their own plans for the nation's good, one has hopes that things may be done which would otherwise be left undone.

Readers of this paper know well how much Mr. Churchill has done for aviation. He has made mistakes, but there is a very true proverb which says that "the man who never makes mistakes never makes anything else." But for him there would have been no Naval Air Service and probably no aeroplane industry when war broke out. His mobilisation of the Fleet before the war ensured the feeding of this country and the safe transport of the Expeditionary Force. His operations at Antwerp, usually condemned by the ignorant, ensured the safe withdrawal of the trained Belgian Army at the cost of a few hundreds of untrained men of the Royal Naval Division, owing to the fact that his "bluff" held up the German advance for the necessary two or three days. The Dardanelles operations were a failure, but if they had succeeded, as they might have done with a little more luck, he would have been a great national hero.

Mr. Churchill lacks balance, it is true, but he possesses strategic talent, and if his activities were toned down by the counsel of older men he could be of very high value. His exclusion from the War Cabinet in favour of three lawyers, a merchant, and a philosopher, is to be regretted. He could not remain in the Cabinet and retain his own self-respect. It is to be hoped therefore that in due time his tireless energy and great ability may be turned to good account.

TABLOID HENDON NOTES.

[The representative of THE AEROPLANE, who has recently fallen into the habit of sending some of his literary friends to Hendon to record the events of the week-end at that aerodrome for him, was informed that this week, owing to Parliamentary verbosity, space was severely restricted. He now states that he has accordingly modelled his method on that of Messrs. Burroughs Wellcome, who are famous for their skill in producing "tabloids."]

Saturday, Nov. 13th.—Cold. Windy. Arrived Hendon, 3.15; left 5, frozen. Spectators, 7; flights, 2; machines, B.E.s; pilots unnamed, by order. Dinner good. Hot.

Sunday, Nov. 14th.—Spectators, hundreds (not counted). Flights, dozens (ditto). Visiting day. Arrivals from other aerodromes, 2 Vickers gun-buses, 3 Avros, several B.E.s, including one with Chev. du Leg. d'Honour. Capt. Jas. Valentine, R.F.C. Also Mr. H. Hawker, on 50 Gnome Sopwith (speed 22 m.p.h. to 84.6; 6 loops, tea, 6 more, with tail-slides, nose-dives, etc., and home). Four G.-W. box-kites, sundry Wrights, and Caudrons *ad lib*. Plenty passengers. Some day. Froze again.—D. W. T.

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Armitage, Horniman, Malet, Ovens, and Saint.

Pupils doing circuits and eights with Inst.: Prob. Flight Sub-Lieuts. Aplin, Davenport, and Moody.

Pupils doing figures of eight or circuits alone: Prob. Flight Sub-Lieuts. Cross and Graham. Certificates by Prob. Flight Sub-Lieuts. Gammon and Sadler. Machines: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors: Edouard Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Pupils with Instructor: Messrs. Hamiaux, Pauli, Cox, Bolton, Fraser, Vernon, Harkness, Wood, Cuthbertson, Yule.

Pupils doing straights or rolling alone: Messrs. Griffiths, Liddell, Bailey, Coppens, Sherwood, Tomson, de Grauw, Hughes.

Pupils doing figures of eight or circuits alone: Messrs. Liddell, Bailey, Hughes.

Certificates by Messrs. W. G. Stewart, W. Hughes, and Bailey. Machines in use: 60 h.p. and 50-h.p. Ruffy-Baumanns.

AT THE BEATTY SCHOOL OF FLYING.

Instructors: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Begg, Bowick, Brown, Byrne, Brynildsen, Barnes, Collier, Cumming, Davison, Edwards, Fawcett, Fellowes, Fry, Godfrey, Hodgson, Jones, Mellings, Podmore, Richard, Sainter, Scott, Smith, Summers, Whincup, Willmott, Williams.

Certificates by Messrs. Brown, Campbell, Fawcett, and Mellings.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes; Caudron tractor biplanes.

Exhibition flights on Sunday by Mr. R. W. Kenworthy.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Messrs. Franck, Gammon, Halet, Holman, McConnell, and Henshaw.

Pupil doing straights alone: Mr. Horridge.

Pupils doing circuits alone: Messrs. Fraser and Hughes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instrs.: Messrs. W. T. Warren, M. G. Smiles, C. M. Jacques.

Pupils doing straights or rolling alone: Messrs. Dawson, Roberts, Lees, Scott, Lambert, Jones, Hunt, and Martin, rolling. Messrs. Ranton, Knowles, Lewis, Jowett, Woods, Thorpe, Hardy, Brainin, Atkinson, Burgess, Heyn, and Summerskill.

Eights or circuits alone: Messrs. Porter, Franklin, and W. Warren, jun. Machines: Four "L. and P." tractor biplanes.

AT THE HALL FLYING SCHOOL.

The following pupils received tuition:—

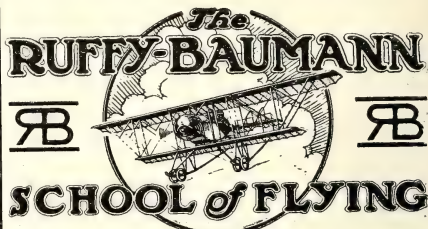
With Mr. H. F. Stevens:—Mr. Broad, circuits and eights.

With Mr. Cecil M. Hill:—Messrs. Nicolle, Butterworth, Drew, Stirling, Dodd, Dresser, Shum, Rattray, Manley, Cook, Evans, Wilkins, Lieut. Bell.

With Mr. Charles Bell:—Messrs. Redford, Capt. Grey, Mann, Smith, Arnsby, Bond, Millburn, Cosgrave, Chapman, Thom, Bennett, Nicol, Baron Ackroyd, Le Coq Moir, Cumberbirch.

Certificate by Mr. Broad in highly satisfactory manner.

Machines in use: Hall tractor (Government type) biplanes.



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PIECEWORK ON AIRCRAFT.

Delegates from the executive committees of seven Trade Unions met at the Westminster Palace Hotel on November 12th to consider working rules to be applied to members who have entered the growing aeroplane industry. The unions represented were the Amalgamated Society of Carpenters and Joiners, the General Union of Carpenters and Joiners, the Amalgamated Union of Cabinet-makers, the National Amalgamated Furnishing Trades Association, the Organ Builders' Society, the Wood-cutting Machinists' Society, and the Wheelwrights' and Coachmakers' Operatives' Union.

The proceedings were private, but at the close of the meeting it was reported that two resolutions had been passed unanimously. The first advocated the abolition of piecework, and it was decided to inform the Minister of Munitions that members of the Trade Unions represented will not be permitted to accept employment in establishments into which piecework has been introduced. Mr. Lloyd George will be asked to issue instructions that all aeroplane construction work for the Government shall be paid for at an hourly rate of wages and carried on under conditions acceptable to the wood-working trades organisations.

The other resolution was that all proposals for the extension of the sphere of employment of women shall be

submitted to and discussed by a national conference of employers' associations and the executive committees of the Trade Unions concerned.

[No one would object to the abolition of piecework if the men would do an honest day's work at day work rates. The trouble is that they do not, and are not in the least likely to do so until they are told honestly the present perilous position of the country. Employers would willingly pay the men double what they are getting if they would work, but so long as the Unions insist that the best men shall do no more work than the worst men the position is hopeless.]

The only remedy seems to be conscription. Then the bad workers will be conscripted and the rest will speed up automatically to avoid having to follow them into the trenches. Then also men who have fought in the trenches will come back to the shops, and they will very soon drive into the heads of the shirkers the need for putting every ounce of energy into their work.

As for women workers, why should women be barred from doing men's work of any kind? Provided they are paid men's wages for the same amount of work done—not for the same hours necessarily—every effort should be made to employ women and so release men for the heavier work which women are physically unable to do.—C. G.]

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

"On revient toujours à ses premiers amours," said some native of that country to which we owe the most expensive motors and the cheapest maxims. Do you really now? Then the bigger fool you. What! Look at you, forty-five, fit as twenty-five, with all your teeth, all your nerve for a big fence, a bad lee-shore or a worse *atterrissage*; all your hair, and never a grey one nor another inch of waist. You, whose taste for everything worth while is all the keener for being truly a taste, not a mere cub-instinct. You, who have known many countries, and learned thereby to know most men and fewest women. You, who have probably worked hard and done some little worth the trouble of doing, yet feel you are still short of your best and biggest in life. You, who have learned that nothing therein is sterling except the coined gold, nor outweighs it; the only real source of joys, for the simple reason that none can be had without it. What an irredeemable fool! For look at Her. And be thankful you escaped a flapper's fealty, vowed in the glamour of a harvest-moon, waned twenty years since. Seven years younger than you, yet looking seventeen years older. Eager-eyed as ever, but for cheap social triumphs. With all the outlook of Kensington, S.W., and no other in this world. Querulous; content with nothing, not even a second chin, apparently. The true flower of the early twentieth century, forced upon the picture-papers, and a trifle overblown. No indispensable ornament, and certainly no use to anybody on earth, including herself. To whom you would still return, then? Look, again, at her daughter, her second self of twenty years ago, only more so. Not much. For, looking, you shudder into sanity again, and hunt for a taxi to be out of the same room from the pair of them, and the dreadful memory of a near thing.

So it is in much the same sort of curious, *meliora-provari*, spirit that one returns to the subject of any rotary-motor, albeit aviation and our love of limitless spaces began with the type: since, in fact, we "learned about flying from 'er," and still do, many of us. And having scanned, dissected and analysed the points and make-up, the whys and wherefores of so many others, radials, verticals and V's, one can perhaps better appreciate those of a later development such as the Rhône.

For it is not only simpler mechanically than most—with the exception perhaps of the latest Gnome monosoupape, which has only been really consolidated from its experimental stage since September, 1915—but, as will presently be seen, it presents in no common degree every feature of durability as well as easy upkeep. What, after all, is mechanical simplicity? Not so much fewness of parts, in my opinion, greatly though that quality counts, as a scheme of design which most eliminates the chances and risks of mechanical failure. You get then precisely this is the Rhône valve-gear, in the make-up of its connecting-rod and crank-shaft, and in its lubrication system. And withal, as you study the detail of it all, you recognise that this risk-elimination has been deliberately and chiefly schemed for, beside being worked out prettily enough.

The two fundamental models of the Rhône rotary aero-motor are the 7-cylinder of 60 h.p. and the 9-cylinder of 80 h.p.: the 120-h.p. and 160-h.p. being respectively the duplicates of each. Even so, practically the sole difference in the design is that the attachment of the connecting-rod-shoes—which are the same as those of the Anzani radial—are alternately set, by pairs—all but the ninth one—into three concentric grooves formed inwardly of the drum instead of alternately by pairs, into two grooves only, as in the 7-cylinder model. That is to say, in the 9-cylinder, the connecting-rods go in two sets of different lengths, all but the longest ninth one, while in the 7-cylinder they go in two lengths, all except the seventh, which is the shortest one.

The cylinders themselves are not machined out of the solid, barrel and cooling fins, like certain others; but are less expensively and equally effectively formed as castings of a specially close-grained steel, cast fairly thick, but machined thin; the cooling-fins apparently being tooled off to the nodal and anti-nodal curvature of which the cooling-efficiency has been so clearly established. Then, instead of being flange-gripped or bolted in any way, the cylinders are screwed, gas-pipe fashion, into the one-piece body of a steel crank-chamber; a ring—which to some extent acts as a locking-nut for the Minné type, as its under-face is slightly acute-angled—being first run on to the threaded part of the cylinder. The

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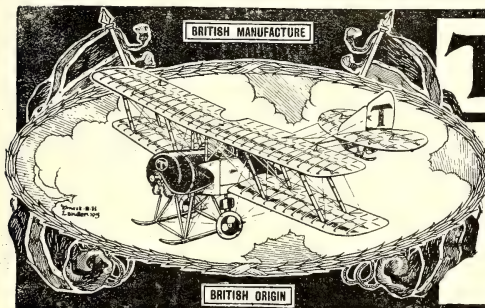
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overhead valves are set on at a slight angle; but a-row with the cylinders; that is, transversely to the crank-shaft axis. Here it will be noticed that the exhaust ports open in the direction of the motor's rotation—i.e., anti-clockwise viewed from the front—so as to give a better cooling against such air-resistance as may enter the cowl. Personally, I do not think there is much either in this claim or the further claims that this extremely small setting-angle makes any great difference to the available valve area, or the shape of the combustion space. Even less probable—frankly improbable, I should say—is the far-fetched claim that it does away with any infinitesimal side drag on the valve-stems that centrifugal force may possibly set up. At any rate, if ever any motor should have had detachable heads with colonette attachment for the cylinders—in the original De Dion style—it is the Rhône, because it is impossible to get at the valves at all without dismounting the cylinder to which they belong!

The induction, too, shows how difficult it is to have advantages both ways. Here, on the one hand, as has just been pointed out, you have the exhaust-gases streaming out against the comparatively still air immediately behind the propeller, or in the cowl; which may or may not help to cool them, and the valves behind them, more rapidly. On the other hand, you have the carburetted mixture in the crank-case distinctly heavier than air; and therefore as a fluid that is certainly susceptible to the action of any centrifugal force set up in the motor; but no less so to the negative action of our sticky old friend, inertia. All very well, if you can make these actions positively useful; as with the piston valve of the original Gnome, and the barrel-transfer and port-induction of the later monosoupape—which is really a two-stroke construction running on the four-stroke cycle—the gases, inlet and exhaust, all going the same way home in either case. Still, having once set those factors going to obtain some sort of theoretical efficiency at top speed, don't imagine that you can rein them—any more than a mad gyroscope—to anything less. Short of killing them outright by cutting out your ignition—a truly horrible fashion of motor control, when you come to think of it—they will "go wild on you"; for the best of subsidiary throttling only results in alternate bumps and gasps and rushes; never the steady pull of any type of motor with stationary cylinders. All of which, as I said some time ago, constitutes my chief objection—if there were no other—to the rotary type.

Now, it is very nice to have mechanically operated inlet-valves; almost unthinkable nowadays to have anything else; even if you cannot get at one of them without taking down its mother-cylinder. But before considering whether or not it is going to be the very devil to get mixture to fill a cylinder *against* both centrifugal force and inertia—especially when it is chasing the cylinder round, not meeting it—you are smitten with curious forebodings when you see a cylinder with nearly four inches of diameter and about six of piston-travel. Seven of these, you think, spinning at over 1,200 r.p.m. for no more than 70 h.p.! With such a content, and a good 95 lbs. of compression, if an ounce! When you remember what you have seen four cylinders, no bigger, let alone seven, yielding betimes at Brooklands, in some vulgar trade contraption, worthy of a grocer's delivery car, running at no higher shaft-speed! Precisely, my dear Watson; your murring instinct or memory has translated your doubts into certainties, and answered your proposition before you considered it. Verily it is going to be a problem to get a full dose of the mixture as ordered into the cylinder, or anything like a content-efficiency out of it, against such physical restrictions; even with a dandy-piston with as many as four rings, one-tenth of an inch wide, set within the space of three-fifths of an inch around its head. You might, it is true, train that other force of velocity to help you to force induction, by tapering the diameter of the transfer pipe from very wide at

the crank-chamber outlet port to very narrow at the valve inlet: as appears to be the case according to the picture. Only it happens to be nothing of the kind; that transfer pipe is merely twisted in the bore, and is of the same diameter all through. So, like the grocer, you may probably prefer the plain trade results of a steady-drawing, because stationary-cylindrical, motor, however rough-hewn and common, to any sort of high-art inefficiencies. And so do I, for another.

Or, again, if you did set up to be an artist in aeromotor design, yet at the moment could think of no more original way of securing the gudgeon-pin in such a refined piston than the well-tried one of setting in plain screw bolts, one on either side of the connecting-rod head, you would surely be a thorough artist, and give that ancient simplicity the little redeeming touch of original craftsmanship to finish and make good. Such as by boring a little hole through each bolt-head to take a length of stout steel wire, run through and looped out with the pincers, first flush against the inside wall of the piston, then up to the top, mid-way round, and so on through both bolt-heads, so as to form an endless ring that would neither rock nor fall, nor allow those bolts to work loose? Something that would pull free when we wanted it to come out, and never stir until then, what? I should hope you would anyway, seeing what an essential point in a sound aeromotor job the absolute security of gudgeon-pins is, quite apart from any artist-conscience that would make you put in the nicest work where it didn't show. But then neither you nor I designed the Rhône rotary, in which any trifle of this kind happens to have been forgotten.

Yet we must admit that the man who did really spread himself to make a very pretty piece of work of the connecting-rod attachment recognised withal the merit of the Anzani shoes, and another way of using them. His

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way has been to form two disc-like pieces, flanging them on the outer side to enclose ball races, and cutting two deep concentric grooves on the inner side. These grooves on the one disc set opposite the corresponding grooves on the other, would naturally enclose and secure between them the connecting-rod shoes—the shoe of each alternate rod in the upper and lower grooves respectively—if the discs were bolted together to form a drum. This is exactly what has been done, the attachment being made with seven counter-sunk screw-bolts—huge grub-screws really—set in from both sides. Incidentally three, or even two, such screws set in from either side would have sufficed equally to unite these discs, for not only does the drum thus formed merely rotate, but there is no pull whatever from the shoes to set up any shake. Indeed, seeing that is hard held together, not only by the ball-races its outer flanges enclose, but by the shoulders of the crank-webs—which, being stationary, never vary their relation to the drum, it is a question whether any of these screw-bolts are needed at all, and if sufficient attachment of the two halves of the drum would not have been afforded by the four vertically set bolts which rigidly attach the foot of the seventh—or master—connecting-rod to the drum, to form a master-grip.

Here—apropos this rigid attachment—it may be as well to recollect that the apparent non-balancing thus set up, which would be very fatal without some compensating device in a radial motor, is really non-existent in a rotary, because the drum merely rotates upon the crank-pin and does not reciprocate at all. That is the reason, too, why mere bolting of the connecting-rod foot to the drum—for which again two bolts would have served as well as four—is sufficient attachment. Also, why there are no stresses on the “ankle” of the rod just above this foot, because the rods do not reciprocate relatively to the crank—as in any other type of motor—but merely slide with their pistons in and out of the cylinders; which actually move, we must remember, eccentrically to the crank-pin axis in this case; though concentrically to the crank-shaft axis. Indeed, viewing the mechanical conditions throughout, I believe that the complete attachment of all parts of the device—including that of the master-rod to the drum—could have been equally well effected, and far more simply, by forming lugs on the discs and setting a single squared bolt through these lugs and the foot of the rod between them, with a sunk lock-nut on, or a cross-pin through, the end of it.

So much for the arrangement in the 70 h.p. 7-cylinder Rhône. In the 80 h.p., however, the attachment of the rods is still simpler. For instead of two concentric grooves and three flanges, three grooves and consequently four flanges are formed in the discs. But the inner or lower two flanges are stepped progressively higher.

Thus the third pair of flanges completely surround the foot of the ninth or master rod, yet leaving the rod room to oscillate between them, the foot itself forming a complete ring enclosing the fourth or innermost pair of flanges; while the shoes of the other eight rods are set alternately as before, in the outer two grooves, and enclosed by their corresponding pairs of flanges. In this case, actually nine great grub-screws are used to unite the discs from each side—or eighteen in all—although a third of the number might have served the purpose but for the designer's love of absolute security.

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From this it may be seen that the name of the company is most appropriate. A sunbeam is a cheery thing to look upon, and its proper place is in the clouds. Both directors, shareholders and staff of the Sunbeam Motor Company are to be heartily congratulated.—D. W. T.

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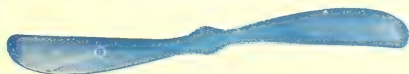
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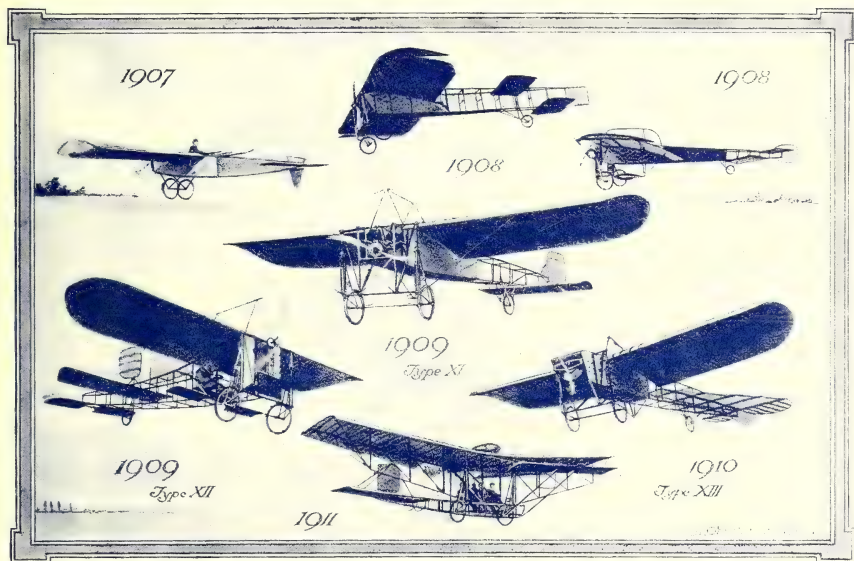
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ON PROFITS.

It is always satisfactory to find that the ink one spills on paper is not spilt in vain and that someone has been touched by one's arguments. A couple of weeks ago I dared to insinuate ever so mildly that the British Workman—one must, of course, dignify our modern autocrat with capital letters—is not doing his share towards winning this war, but, on the contrary, is apparently doing his best to prevent his former shop-mates now at the front from winning it. I paid the Workman the compliment of admitting that if he were permitted to know the truth about the perilous position of this country he would turn to and work like a nigger, regardless of wages, personal comfort or anything else. I even absolved him of wilful ignorance by pointing out that the press (a humble thing with a small p) is muzzled, and that if it were unmuzzled the British Workman would revolute with the rapidity of a Mexican as soon as he knew the truth. Furthermore, and besides, I made it quite clear that the Workman himself is all right if left alone, and that the person to blame is the Trade Union official or the Walking Delegate who stirs him up to inactivity—which sounds like a bull although it is not.

Now, a good many thousands of workmen in the aeroplane industry and in the Services read THE AEROPLANE every week, and not one of them has ventured to tell me that anything I said was untrue. Probably the good-statement workman who reads this paper saw that the sentiments therein could not be refuted, and I can only hope that he rubbed it into his shop-mates that if they do not work we are not going to win this war.

However, among the letters which that article did produce, two deserve special note. One came from Lord Headley, a civil engineer of wide experience, enclosing a very able article on the subject of the British Workman. This article is reproduced in full further on, and sets forth very clearly one fact that the Workman does not appear to realise, namely, that after the War he is bound to get lower wages—which means that he will have to work harder, or work more efficiently to live as well as he does now.

Mark you, that does not mean that the man who was worth 30s. a week before the war and who is now earning £3, or £4, will have to work after the war for 25s. a week. It may mean merely that taxation will be so heavy and the prices of everything will rise to such an enormous extent that his £3 a week will only buy what 25s. bought before the war. Doubtless, cheap German goods will flood the market as soon as Peace breaks out and the workman will buy them readily, but if our Government at the time—which will be different from the present Government—has any wisdom left, it will put a very heavy duty on all German stuff, and, anyhow, the price of foodstuffs will rise, owing to the rise in rents, transport, the taxes to be paid by the shopkeepers, and so forth.

A SCATHING CRITIC.

Leaving aside for the moment the matter of wages, though it has much to do with the question of profits, we may now turn to the second letter to which I have

referred. This letter is produced on large thick and expensive paper by a modern, and, presumably, expensive typewriter, whereas I notice that Lord Headley's article is written by hand on very ordinary ruled paper, precisely similar to that which I, a mere poverty-stricken journalist, am compelled to use.

Doubtless, the British Workman of the kind who is impressed by the walking delegate would expect a Peer of the Realm to write on royal blue paper with gilt edges and a coronet in each corner. As a matter of fact, it is the Workman's friend who seems to be able best to afford luxuries. His signature is difficult to read, but it looks like "Uertstet." It might be an attempt to Anglicise some Teutonic name such as Herzstädt, or Herdtstädt, but it does not matter much anyway. And he writes from the aristocratic heights of Hampstead, where I should rather like to live if I could afford house-rents artificially inflated by affluent aliens. If I thought THE AEROPLANE could afford it, I would imitate the British Workman and strike for a rise, but I know it cannot, so I continue to live in a lowly Western suburb—possibly that accounts for the lack of veracity with which some readers charge me.

However, here is what this friend of the Workman has to say. Doubtless, it is intended to be witheringly sarcastic. The spelling and punctuation are his own:—

Dear me, Mr. Editor, what a lot of scoundrels these British Workmen are! I never realised it until I read your unprejudiced and unbiassed article. How dare the rascals try to put up the price of their labour (for wages are the price of labour); and how excellent of the Works Manager (strong man—a Norman, I suppose) to send them cringing away. Of course, he didn't refuse to pay them more because it would mean less to the employers. No, no; pure patriotism, Mr. Editor, pure patriotism. Do suppliers of goods to the Government ever try to put up the price of their articles? Never. When the workman slacks it means that the makers of aeroplanes cannot supply as many machines to the Government as they would like: aeroplanes are necessary to carry on and win the war: therefore in slacking the workman is a traitor—the double-dyed villain! How true: how faultless the reasoning: what a perfect syllogism. Of course, the more machines he supplies, the more money the employer makes—but this does not influence him. No, he is a patriotic fellow, the employer, and the thought of money never enters into his head (but how fortunate being patriotic also means making money).

Yes, the workman, who, naturally, being an ignorant savage (can he read the newspapers?) is unable to judge public events and the progress of the war with the unbiassed calm of You or I. He mustn't have any opinion on anything, must he? (unless it coincides with our own) He is only there to do as he is told and help his employer to make money—I am sorry—I mean be patriotic.

Thank you, thank you, Sir, for your exposure of the dirty Trade Union Officials, whose hands are as clean as the employers—how dare they have clean

hands! As you say, I approve of Trade Unions, but of course they *must* be patriotic. They must never ask for a rise in wages in War time. But fancy the ignorant brutes of workmen not seeing through these Officials. That shows you what a low kind of intelligence they've got.

But then, you have amply proved how patriotic the employers of labour are and how unpatriotic the workmen are—and there's no more to be said.

By the way, have you read Ludovici's "Defence of Aristocracy?"

WAGES AND PROFITS.

Boiled down to plain language that letter means that the Workman can take what steps he likes to make increased War Profits. Mr. Herzstedt, or whatever his name is, carefully omits to mention that practically all factories making munitions of war, including aeroplanes, are under Government control, and so cannot make exorbitant profits, and that the Government takes half of whatever profits any factory makes, over and above its profits of the year before the war—barring a small percentage of increase something like 5 per cent. or 10 per cent., which is permitted to the owners, presumably by way of "overtime."

The workman, on the other hand, is not taxed on his war profits. The cost of living has increased perhaps 50 per cent., but as all munition workers are drawing anything between double and ten times what they were drawing before the war, the workman seems to be making a bigger percentage of war profit than any manufacturer.

It is also well to remember that before the war hardly any aeroplane manufacturer made any profit at all, and that whatever profit he makes this year is not "found money," but is merely interest which should be spread over the value of the work he has done and the capital he has expended during the years when he was, in many cases, risking his own life and spending his own money on dangerous experiments. The Navy and Army, especially the Army, is now profiting by the results of those experiments, and the British people, including the Workman, can thank these experiments for the fact that the British Army—and the French, too—was not wiped out at Mons and during the retreat on Paris last year.

Nevertheless, except for a mild protest that it is rather hard luck to have to give up half his belated reward for services rendered, the aeroplane maker faces the prospect of war taxation quite cheerfully. He works longer hours than any of his own workmen—for he is thinking and planning and scheming to improve his designs and increase his output every waking hour of the day, and frequently dreams about them at night.

I wonder how many workmen ever think about increasing their own output for the good of the country. If they did, of course, it would be waste of time, for their Union would stop them from exceeding the regular rate of work.

In the particular instance which seems to have raised the ire of my critic the works manager was perfectly willing to pay largely increased wages if he could have correspondingly increased output; but, having been a workman himself, he was not going to raise wages when he knew that every man in his shop could pretty nearly double his own output if he really chose to work his best.

It was not a case, as my critic suggests, of not being able to supply as many machines to the Government as he would like, it was not being able to supply the continually reiterated demands of the Government for more machines, although he knows it can be done if the men will work as he knows they can, and as he has done many a time himself for less wages, or for no wages at all.

It certainly is fortunate that being patriotic means making money, but, in his case, his profits are very much lower, as a percentage of the capital employed, than are those which he wants his workmen to make, if they will work.

WHAT THE WORKMAN READS.

The Workman, not being an ignorant savage, can and does read the newspapers, but he is unable to judge public events and the progress of the war because he does not know the truth. He reads of gallant charges and "victories" won by an advance of twenty yards. But he does not read of what those victories cost owing to lack of proper artillery preparation, which in turn was owing to lack of munitions.

The aircraft workman reads of the "dominance of our airmen," of "enemy battleplanes shot down," and all the other claptrap turned out by misguided officialdom with the intention of "encouraging" the people of this country, but he does not read of the poor devil of a pilot who breaks his own and his passenger's neck through trying to stagger out of a tiny field in Flanders on an aged creak of a machine, because the new one promised by the makers has not turned up, because the men working on it stopped work at the behest of a walking delegate, or because they wanted to go to a football match, or simply because they thought they had done enough work for the money they were getting.

Nor does the aircraft workman read of the hours of mental agony of the observer who goes out on the long reconnaissance round Valenciennes on a machine which is too decrepit to climb to the height which means comparative safety from shell fire.

Nor does he read of the Flying Corps mechanic who used to work at the bench alongside him, but was so foolishly patriotic as to enlist, instead of remaining at home to strike for an increase in his already doubled wages, and who is now working all night in the open, soaked to the skin, crying with cold, and burning his fingers with a brazing lamp in an endeavour to warm them enough to enable him to put together some part of a machine which he has had to repair in the field because the necessary spares have not arrived from England, owing to the workman who should have made them going off to listen to speeches by Trade Union agitators instead of doing his work.

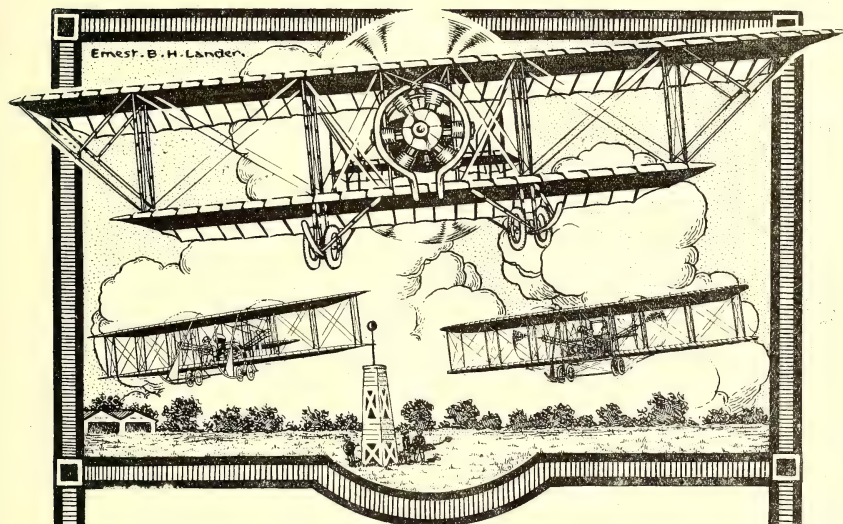
If the papers were allowed to give us more of the black side of the war, and less of fictitious or exaggerated victories, it would be vastly better for the country.

THE VALUE OF LABOUR.

I do not forget for a moment that labour is the only capital. Money is of no value in itself. A chunk of gold is no use on a desert island. But labour means brain labour as well as manual labour. And because manual labour is as useless as gold unless directed by brains, therefore brain labour must be more highly paid. Money is only a medium of exchange, and paper is as good as gold so long as there is not more of it in circulation than the country is worth. Even land is not capital, for land is useless until brain-labour makes something grow on it, or produces something out of it—whether food-stuffs, or cattle, or raw material for houses, or clothing, or machinery.

Mere rise in wages is worth nothing if the price of the commodities of life rise also. Therefore, the true rise in wages is not a rise all round, but a rise in which one man gets money which puts him a bit ahead of the men with whom he is working. The labourer is worthy of his hire, as the Scriptures tell us, but it is nonsense to pretend, as the Trades Unions would like the workers to believe, that the best men are only worth as much as the worst. If so, why should a Trade Union Secretary, who does all the directional work, draw more money

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than a Walking Delegate, who only goes around and talks?

"The labourer is worthy of his hire" cuts both ways. Not only is his work worth paying for, but his work should be worth what is paid for it. There are two sides to the bargain. The employer must pay his men what they are worth, and the men must do the work for which they are paid. And if one man can do more work than the rest, he should do it to the utmost of his ability, and insist on being paid accordingly.

The only men who ever get on in the world are those who work on that principle. The sooner the British Workman realises that fact the better for himself and for the country in which he is, for some curious reason, the free and independent elector of about the worst Parliament this country has ever seen. And the quality of the Parliament is the fault of an easily gulled electorate. Which, again, is owing to the ineradicable habit of the daily press of forgetting to recognise Truth when it meets the lady.

Finally, I may add that I have never heard of Ludovici. I prefer Clausewitz or Bernhardt among foreign writers on social matters.

AN APPENDIX ON WAR COSTS.

That is really the end of the argument, but there is an appendix which may interest some readers. Labour being the only capital, how much is this war really costing? Supposing some fool pupil smashes up beyond repair, or loses at sea, a Service aeroplane which cost the State £1,500 in cash. Does that mean £1,500 lost? No, it does not. The makers made a profit on it, so that profit remains in the country. The engine maker's profit also remains, and the tyre-maker's profit, and the instrument maker's profit, and so on. Also the men who made the raw materials with their own hands—apart from the commission agents who hawked them to the buyer—and the men who shaped them and machined them, and so forth, all made a profit on their labour.

That is to say, if a man is capable of living on £1 a week—I have lived very comfortably on 16s. a week for months on end, and in England, but I put it at £1 owing to increased prices in the past 25 years—and that man draws 40s. a week, the work he does is worth 20s., and the other 20s. is profit. If that man draws £20 in wages while working on that machine, and the machine is lost, £10 in actual value of his labour is lost to the world, and the other £10, which is profit, remains, although it has been spent in other things such

as beer and tobacco and clothes, for the beer maker and the tobacco makers have had it.

It is, of course, impossible to calculate an absolute unit of value for labour, but perhaps that may give you an idea of the principle of the thing. Thus, one sees that the cost of the war is not really the value of the money the Government is squandering on it day after day, at a rate of millions a day, but it is made up of three main items:—

(A) The labour cost of ammunition fired away and war material broken, worn out or wasted.

(B) The value of the lost labour of all men and women now at the front, or on war service at home, or working on the production of war material.

(C) The labour cost of all the food consumed by the said men and women on Service work.

After the labour cost has been paid the rest is clear profit, and remains in someone's pocket.—Not in mine, I assure you.

Where Germany has the advantage over the Allies is that Germany is now as nearly as no matter self-supporting, whereas the Allies are buying largely from America and other countries; consequently, Germany's labour-profits remain at home, whereas the Allies' labour-profits go abroad. Therefore, Germany is running the war much cheaper, economically speaking, than we are, although her loss in men is much higher.

Once you get into your head the fact that the absolute value of an article is the intrinsic value of the labour expended in making it, not necessarily the wages paid for making it, and that the real worth of a man is the amount of useful work he produces, or the amount he causes others to produce, or the increase he causes in the work others do—which means increasing their efficiency—you can work out most interesting problems these winter evenings. For instance, try working out the labour-value of the weekly output of the Royal Aircraft Factory in very small potatoes, and you will wonder how the majority of the employees manage to live, let alone to draw the enormous sum in money-wages which they do.

There is, of course, always a possibility of making the war into a National Industry in which by perfect organisation and by training the stay-at-homes to a perfect state of efficiency, the Nation could keep the Navy at sea, and the Army in the field, and still show a profit on its manufactured exports. Something of the sort is the only escape from National bankruptcy and the reduced wages of which Lord Headley writes hereafter.—C.G.G.

THE BRITISH WORKMAN.

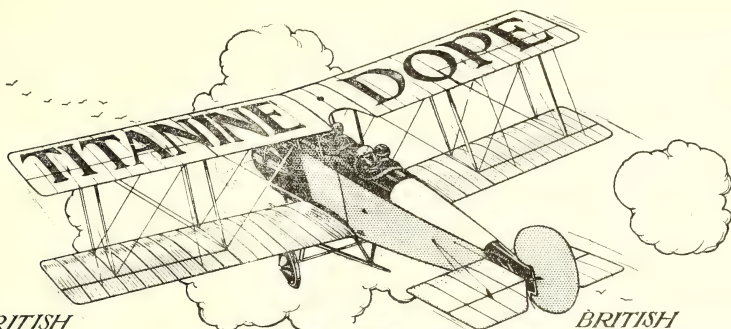
By the Right Hon. THE LORD HEADLEY.

The powerful article appearing in THE AEROPLANE of the 10th inst. is one which arrests the attention by its absolutely fearless revelation of facts which cannot fail to bring a blush to the cheek of all true Englishmen. *Magna est veritas, et praevalabit*: we should not attempt to get away from the truth that all this slacking and nonsense about men doing a certain "standard" of work should be stamped out at this present time.

If I am strong and skilful and can turn out double the amount that my brother can turn out I should be allowed to benefit the State, and myself incidentally, by my superior attainments. I should not be forced to do only half what I am capable of doing: there is no room for such rubbish in war time. The only place for people who, with deliberate intent to diminish the country's turnout of munitions, spread poisonous doctrines amongst the workmen, in prison, and after the war trial for treason or treason felony. Depend upon it, C. G. G. has got hold of the right end of the stick, and I have suggested that the article should be printed in leaflet form for wide and general distribution.

Some few weeks ago I had the honour of opening the Confectioners', Bakers', and Grocers' Exhibition at the Agricultural Hall and of presiding at the Press lunch. In the course of my remarks in proposing the success and prosperity of the Trades I made the following observations which, as will be seen, were entirely misinterpreted and twisted by a writer in the "Labour Leader," a paper which, I believe, circulates in the Midlands.

Speaking of the enormous waste caused by the war, I said: "It seems to me that, as we are all going to be poorer after this dreadful and devastating war, the British working-man will consent to work for somewhat lower wages than heretofore and thus help the country to supply itself with necessities without having to go abroad. I may be quite wrong from the Political Economy point of view, but it seems like common sense to argue that if a thousand millions of pounds have been absolutely destroyed, in the form of shells, ironclads, pay of allowances, etc., etc., there will be just that amount less to draw upon when the war is over, and that, therefore, there will be less to pay in wages."



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GEORGEY · WATSON · 1915

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

I here give the quotation from the "Labour Leader," and I must say I was a little startled when I saw the heading, "Amazing Proposal," for the war was not my proposal and the results of the war will not be "proposals," but unpleasant facts.

From the "Labour Leader," October 21st.

"Many Labour leaders and Trade Union officials have made successful recruiting speeches by appealing to the workers to take up arms in defence of their Trade Union privileges, menaced by Prussian aggression. Trade Unionism, they told their hearers, would not be worth a dam (small Indian coin) if Prussianism were to triumph. As a consequence, many gallant fellows who believe in Trade Unionism responded to the call and shouldered the gun in defence of their belief. A number of them have given their lives for that belief, while others are now risking their lives in the same cause.

There are other people, of course, who are not so foolish as to believe that this war is being waged by the Allies for, among other things, the protection of Trade Union rights. Among these people is the noble Lord Headley, who, presiding at the luncheon in connection with the Bakery and Confectionery Trades' Exhibition, held at Islington the other day, stated frankly that after the war "the British workman would have to consent to work for somewhat lower wages than hitherto." There is no ambiguity about that statement, which means, so far as the workers are concerned, that this war, according to Lord Headley, must be followed by lower wages. According to the "Glasgow Herald," Lord Headley said:—

In regard to many industries the plain fact was that the foreigner lived much more cheaply than the British workman and charged far less for his labour. Where labour, and not machinery, formed a small part of the cost of production we should be able to compete with the foreigner, and that should be the case in high-class confectionery more than in anything else. If we were to defeat the foreigner in other industries after the war it seemed to him that the British workman would have to consent to work for lower wages than hitherto. At any rate, he hoped so in order that the country might supply itself with necessities without having to go abroad for them.

Now in Lord Headley's mind it is clear the men in the trenches and on the ships are fighting for, among other things, "lower wages" "if we are to defeat the foreigner in other industries." Only by the British workman accepting lower wages can we hope to beat the foreigner economically after the war! That is Lord Headley's view, and no doubt he speaks for many who hold similar opinions. On the other hand, the Labour and Trade Union officials who support the war tell us that the men in the trenches and on the ships are fighting to overthrow Prussian aggression which was menacing their Trade Union

rights, including standard wages. Which is right: Lord Headley or the Labour and Trade Union officials?

Much depends on the answer to that question. It is yet premature to expect a definite answer, but if we take our cue from present happenings it looks as if Lord Headley's point of view is the right one in ruling circles. Lord Headley does not advocate lower profits: he advocates lower wages, which mean higher profits. The war, then, in the opinion of his lordship, will be followed by lower wages and higher profits.

It would be interesting to hear the opinions of soldier and naval Trade Unionists on Lord Headley's prediction, which proves more than anything else the need for an Independent Labour Party. I wonder if Lord Headley had anything to do with the munitions of War Act?"

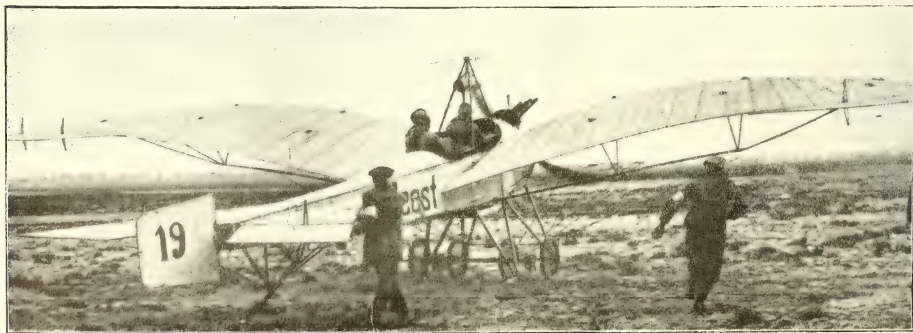
I cannot quite follow the arguments of the writer of the above, but I gather that he is of opinion that "standard wages"—whatever they may be—should continue the same or increase, whilst all the rest of the community have to be satisfied with smaller incomes.

Take my own case: I am a civil engineer, but all my works are in abeyance, and I have not made one farthing in professional fees since the war broke out, and it will thus be realised that my position is far worse in the matter of £ s. d. than the ordinary workman with his £4, £5, £6, and even £7 a week. I and my brother-engineers in like plight have far more to keep going than the working-man—is there no one to advocate "standard fees" for me and those who, like me, are dependent upon their professional efforts?

Will no "walking delegate" come along and say you must have a "standard fee"? I am as capable of doing my particular kind of work as the working-man is of doing his work, but I suffer from the war whilst he makes a larger weekly income than he ever made in all his life before!

I should like some definition of "standard wages"; I don't advocate lower profits or lower wages—I merely say that we must get what there is, we cannot get what there is not. I may—indeed should—like every man to have plenty; but supposing there is not enough to go round? What then? It would give me far more pleasure to sit down to a good substantial plain dinner with a thousand poor people than to sit down to the finest repast conceivable with only ten of my own personal friends. I cannot help this feeling, it is because I am democratic by nature—there is no harm in it—only my reason tells me that all men cannot be equal and that, according to my present lights, anything like a "standard" wage is impracticable. I think, however, that I could fix the wage of the mischief-making delegate without the slightest difficulty.

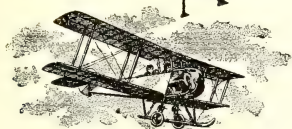
Royal Societies' Club, S.W. 11/11/15.



A German Experiment—Dr. Geest's monoplane, to which reference was made recently by our Danish Correspondent.

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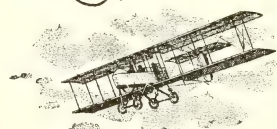
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THE USES OF ADVERTISEMENT.

The Royal Aircraft Factory certainly deserves credit for the enterprise it has shown in instituting a Continental advertising campaign. Apparently it has realised the impossibility of impressing people at home who happen to know anything of flying with its capabilities, and is now out for Continental kudos. Paragraphs which appeared during a recent week in various London papers, telegraphed from neutral countries and from France, have caused considerable amusement to the Flying Services of this country and to the aeroplane industry.

It certainly strikes one as somewhat peculiar that neutral journalists, or even those of our chief ally, should be accorded privileges denied to British journalists, for it is not on record that any party of British writers on aeronautical subjects has ever been invited to inspect the largely advertised products of the R.A.F. Possibly the authorities fear that they know too much already about that establishment. However, it appears that little harm can be done by this visit, because apparently most of the reports have either been so mangled in transit or have been written with so little understanding of the subject that the majority of the information contained is beautifully inaccurate, and therefore can scarcely convey information of any value to the enemy.

Those who know that interesting establishment at Farnborough will be pleased to hear on the authority of a Norwegian paper that there are over 3,000 workmen engaged day and night, and all day Sunday, by the R.A.F. They would be still more interested to know how much work of any real value is produced by these 3,000 workmen, and how much the said 3,000 could produce if the establishment was properly organised and managed. Also, how many of the 3,000 might be per-

mitted to enlist without in any way impairing the total output.

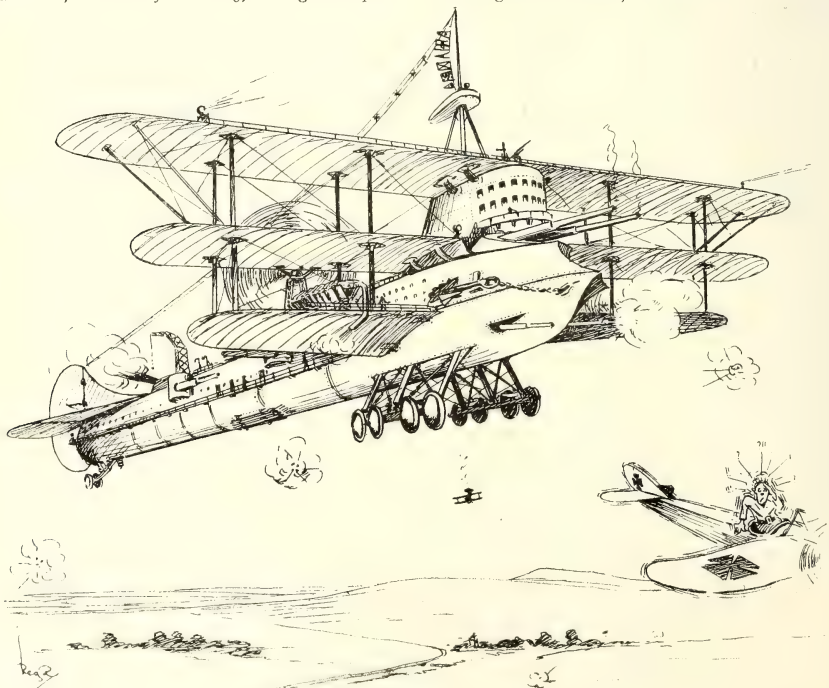
Just why a neutral journalist is permitted by the Censor to publish to the world the statement that aeroplanes with three engines of 100 h.p. each are being produced in this country is not quite clear. It seems to be a somewhat informative statement, and its permission may be compared with the Censorship's refusal recently to permit this paper to call a B.E. biplane a B.E.

Another somewhat interesting statement from Norway—apparently on the authority of an R.A.F. official—is that there are 16 training camps for military aviators and a similar number for naval aviators. One is only surprised that the R.A.F. refrained from presenting to their neutral friends scale drawings of their latest engine.

In view of the extreme care taken by the Censorship to prevent the enemy from obtaining information concerning new munition factories, it is somewhat curious that these neutral correspondents were allowed to emphasise the fact that they visited the Napier workshops and those of the Aircraft Manufacturing Company as well as the R.A.F.

The correspondent of the "Petit Parisien" seems to be somewhat hazy in his ideas, for, after mentioning Farman, Avro, Morane, Blériot, and Curtiss machines at a certain aerodrome, he distinguishes them from "those entirely of British manufacture," apparently thinking that the Avro is not British, and that the only British machines are built at the R.A.F. He refers to the "small" R.E.7 biplanes, and calls the B.E.2c "imposing." He also informs us that Beardmore motors are made at one of the factories he visited near London, and that these motors are fitted to B.E.2c's.

Referring to the R.A.F., he informs us that "the out-



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

put of machines at present is sevenfold that which was attained at the beginning of the war. Here motors are built up piece by piece and tested, and wings are covered and varnished by women workers with a special varnish that renders them immune from deterioration by exposure to the weather." From this it appears that the R.A.F. now particularly desires to advertise its motors and its dope. The unreliability of the motors is, of course, quite well known to the R.F.C.

B.E.2c pilots who have just managed to stagger out of small landing grounds will be delighted to hear from this French correspondent that the B.E.2c is constructed "to carry, together with its motor weighing some 6 cwt., a large bomb." Perhaps the most interesting thing to know, if such knowledge were permitted, would be whether this bunch of journalists was invited to the R.A.F. by the management of that establishment on its own initiative, or whether the visit was arranged primarily by the War Office or the Foreign Office.

Of course, when one comes to consider the question, there can really be very little harm done in showing any quantity of people round the R.A.F., because no one is likely to learn anything of any particular value, and the only real danger is that possibly a true description of the establishment might reach Germany, in which case the enemy might be unduly encouraged to continue his resistance. The most peculiar thing, perhaps, about the affair is that a neutral gentleman, apparently an American, bearing the doubtless good old Anglo-Saxon name of Selmer Fougner, should have been taken for a flight in a Government aeroplane over so important a military district as Aldershot.

THE R.N.A.S. COMFORTS FUND.

The return of cash contributions is more satisfactory this week than for the previous one, but the Fund is not receiving the enthusiastic support it experienced last year. The scope for good which the Fund might do is many times greater than it was at that time, owing to the rapidly increasing personnel of the R.N. Air Service.

It seems possible that some misapprehension may have arisen through the custom of publishing the grand total of cash received to date. Would-be contributors should understand that the total mentioned is not "cash in hand." The calls on the Fund are so great that it is necessary to spend the money almost as soon as it comes in, and the balance in hand at any time is very small indeed.

Mrs. Sueter has received the following letter from an R.N. Kite Balloon Section in France:—"You will be glad to hear that the 'comforts' could not have arrived at a more opportune moment, for the day before part of our billets had caught fire and burnt up much of our kit."

The following cash contributions have been received this week:—Mr. W. Chapman Waller (4th contribution), £10; Lieut. E. N. Sassoon, R.N.V.R., £10; Messrs. Tubbs, Lewis and Co., £5 5s.; Employees of Airships, Ltd., £1 10s.; Mrs. Pye, £1; Mr. and Mrs. Wade (2nd contribution), £1; Mrs. Forster, £1; Miss Davidson, 5s.; Mrs. Crouch, 2s.; Private Todd, £1. Amount previously acknowledged, £1,261 7s. 7d. Total subscribed to date, £1,292 10s. 7d.

Contributions in cash and kind should be addressed to Mrs. Sueter, The Howe, Watlington, Oxon.

FOR PRISONERS IN GERMANY.

Muriel Countess Helmsley and Mrs. Rowton beg to acknowledge with thanks a further contribution of £2 14s. 9d. from the employees of Vickers, Ltd., Bexley Heath, towards their fund for prisoners of war in Germany.

"THOROUGH."

AN R.F.C. EPISODE AND A SEQUEL.

BY AN AIR-MECHANIC'S FATHER.

The guard's whistle blew, and the train began to move slowly along the platform at Farnborough Station. "One more kiss, mother, it's good-bye for two years." "Good-bye, Laddie; God bless you and keep you." And the train glided out of the station as the mother sank back in the carriage, and the bright-faced, alert 1st A.M. (what a boy he looked!) walked back to the Aerodrome to help to "tune up" the Avro biplane in which he and Lieut. — were to fly over to France on the morrow.

It was the early days of the war, and Mons was still in the balance. As the lad looked up at the brilliantly starlit September night, on his way from the station, he little thought of the time, a year ahead, when, with his pilot stunned by a piece of shell from a German "Archie" while 6,000 feet up, he would have to get out of his observer's seat and, outside the fuselage, clamber to help the pilot, while the aeroplane staggeringly attempted to fly itself.

The early morning September mists had thinned over Farnborough sufficiently by eight o'clock for a start to be made, and a little crowd of A.M.'s gathered round the aeroplane as the officer-pilot and his mechanic took their seats. It was a shrewd mixture of consideration and wisdom which had arranged for the aviator and his former pupil, who had been flying together in the North of England when the war broke out, to be allowed to go to the front together.

The pilot suddenly turned round and whispered something to his mechanic.

"Not really!"

"Yes, it is, coming to see us off himself!"

"Holy Moses! Buck up, you fellows!" and they both straightened themselves as the little crowd around them saluted and made way for the Commandant, who, leaving nothing to chance, had turned out early to give them a send-off.

After a glance all round he asked:—

"Are you all right? Got your instructions?"

"Yes, Sir!"

"Good. Good-bye, and good luck to you."

A mechanic swung the propeller and ran out, the machine quivered, slid forward, and gently left the ground, soaring upward with its planes glistening in the morning sun, as the Chief of the R.F.C. waved them farewell.

Simply an everyday occurrence; the two were merely newly-joined units of the Corps, but, with Marne, Aisne, Neuve Chapelle, and Loos before them, they started off with a thrill of enthusiasm which the personal touch of one man's presence alone could give them.

Thank God they are both, after many close calls, still "on the Wing for England."

And what of the Senior Officer? It is an accepted truism that "no man is any the worse for knowing that he has the goodwill of his fellow-men"; so, shall we see what Sir John French says in his latest report? :—

"For the valuable work carried out by the Royal Flying Corps, I am greatly indebted to their Commander Brigadier-General H. M. Trenchard, C.B., D.S.O., A.D.C."

A NOTE OF SYMPATHY.

As this paper has on several occasions during the past year given the lie direct to the absurd and malicious rumours concerning the late Mr. Gustav Hamel, there is no need for it to reproduce the letter recently communicated to the press by Messrs. Oliver Richards and Parker, formerly solicitors to my dead friend and now acting for his family. It is only necessary to convey to Dr. and Mrs. Hamel the sincere sympathy of all decent-minded people concerned with aviation in the trouble and grief caused them by these rumour-mongers.—C. G. G.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," November 16th, 1915.

ADMIRALTY, November 12th.

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut. H. F. Towler promoted to rank of Flight Lieut. October 5th.

ROYAL NAVAL DIVISION.—Temp. commissions as Hon. Sec. Lieuts., R.M. (Motor Owner Drivers), of undermentioned officers terminated November 11th, 1914, on appt. to R.N. Air Service: Hon. Sec. Lieut. C. Bridgland, R.M.; Hon. Sec. Lieut. A. H. Prothero, R.M.; Hon. Sec. Lieut. H. Field, R.M.; Hon. Sec. Lieut. J. Weightman, R.M.; Hon. Sec. Lieut. C. H. Hayward, R.M. November 13th.

R.M.L.I.—Supery. Capt. absorbed in estab. as now stated, instead of as in "Gazette" of October 19th: H. Fawcett, vice Richmond, promd.; C. F. Kilner, D.S.O., vice Arbuthnot, promd.

WAR OFFICE, November 16th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—November 2nd: Temp. Lieut. A. H. Smith, Lincs, and transf'd. to Gen. List: Temp. Sec. Lieut. A. M. Miller, Res. Regt. of Cav., and transf'd. to Gen. List; Sec. Lieut. J. A. Barracough, R. Lanc and seconded; Sec. Lieut. W. C. Mortimer-Phelan, S.R. November 3rd: Temp. Sec. Lieut. K. N. Pearson, R.E., and transf'd. to Gen. List; Sec. Lieut. A. J. Capel, Som. L.I., and seconded; Temp. Sec. Lieut. E. R. Tempest, Yorks L.I., and transf'd. to Gen. List; Temp. Sec. Lieut. J. T. Rodwell, Essex, and transf'd. to Gen. List; Sec. Lieut. J. L. Chalmers, S.R.; Sec. Lieut. R. W. Nichol, S.R. November 4th: Lieut. C. A. Brooks, Wilts S.R., and seconded; Sec. Lieut. T. Maxwell-Scott, S.R.; Sec. Lieut. C. S. Ross, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) confirmed in rank: R. W. Nichol, T. Maxwell-Scott, C. S. Ross, W. C. Mortimer-Phelan, J. L. Chalmers. To be sec. lieuts. (on prob.): K. D. G. Collier, October 11th. N. S. Percival, October 14th. T. L. F. Burnett, October 15th. A. L. Curtis, October 18th. C. G. Smith, October 22nd. J. Elgood, November 4th.

* * *

From the "London Gazette," November 17th, 1915.

WAR OFFICE, November 17th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Comd.: Capt. J. Valentine, S.R., from an ex-pmpt. officer, October 15th. (Substituted for notification in "Gazette" of November 15th.)

Balloon Officers: Capt. J. F. Cowland, 20th Hrs., and seconded. September 12th. Temp. Lieut. H. Whitaker, R.E. September 27th. October 4th: Temp. Sec. Lieut. R. L. Farley, 9th Res. Regt. of Cav., and transf'd. to Gen. List. Temp. Sec. Lieut. S. A. Meller, R.F., and transf'd. to Gen. List. Sec. Lieut. (on prob.) T. F. Lucas, R. Warwicks, S.R., and seconded. October 5th.

* * *

From the "London Gazette," Supplement, November 18th, 1915.

WAR OFFICE, November 18th.

HEADQRS. OF ADMINISTRATIVE SERVS. AND DEPTS.—Asst. Dir. of Transp. (graded for pay as an Asst. Dir. of Supplies and Transp.): Temp. Lieut.-Col. (Maj. R. of O.) F. Lindsay Lloyd, A.S.C., and to be temp. col. whilst so employed. October 16th. [Col. Lindsay Lloyd will be remembered as the presiding genius at Brooklands for some years before the war. He brought motor racing to a pitch of popularity never before attained, and did much to foster the development of aviation by laying out and organising the aerodrome, where so much valuable work has been done. His promotion will be welcomed by all who have had to do with him at Brooklands.]

* * *

A Special Supplement to the "Gazette" of November 16th contains the following:—

AWARDED THE V.C.

Captain ANKETELL MOUTRAY READ, 1st Battalion the Northamptonshire Regiment.

For most conspicuous bravery during the first attack near Hulluch on the morning of September 25th, 1915. Although partially gassed, Captain Read went out several times in order to rally parties of different units which were disorganised and retiring. He led them back into the firing line, and, utterly regardless of danger, moved freely about, encouraging them under a withering fire. He was mortally wounded while

carrying out this gallant work. Captain Read had previously shown conspicuous bravery during digging operations on August 29th, 30th, and 31st, 1915, and on the night of July 29th-30th he carried out of action an officer, who was mortally wounded, under a hot fire from rifles and grenades.

[Capt. Read was formerly an officer of No. 2 Squadron, R.F.C., at Montrose.]

AWARDED THE MILITARY CROSS.

Captain ROBERT LORAIN, Royal Flying Corps, Special Reserve.

For conspicuous gallantry and skill on October 26th, 1915, when he attacked a German Albatros biplane, getting within 15 yards of it. When the hostile machine dived he dived after it, and followed it from a height of 9,000 ft. to 600 ft. The enemy pilot was hit, and his camera and wireless transmitter were subsequently found to have bullet-holes through them. The Albatros fell in our lines.

Temporary Lieutenant the Honourable ERIC FOX PITT LUBBOCK, Army Service Corps, attached Royal Flying Corps.

For conspicuous gallantry and skill on October 26th, 1915, when he attacked a German Albatros machine at a height of 9,000 ft. with machine-gun fire. The hostile pilot was shot and the aeroplane was brought to the ground within our lines. The attack finished at a height of only 600 ft., and during an almost vertical dive, when the pilot was fully occupied, Lieutenant Lubbock fired deliberately and with effect.

* * *

A special Supplement to the "London Gazette," issued on November 16th, contains a list of warrant officers, N.C.Os. and men, who for acts of gallantry and devotion to duty whilst serving in France and Flanders and at the Dardanelles have been awarded the Distinguished Conduct Medal. • The following R.F.C. award appears among them:—

1232 Flight-Sergeant J. HARGREAVES, No. 11 Squadron, Royal Flying Corps.

For conspicuous gallantry and skill on several occasions, notably the following:

On September 21st, 1915, when in a machine armed with one machine-gun and piloted by Captain Rees, a large German biplane armed with two machine-guns was sighted 2,000 ft. below. Our machine spiralled down and engaged the enemy, who, being faster, manoeuvred to get broadside on and then opened fire. The attack, however, was pressed, and the engine of the enemy's biplane was apparently struck, for after a quick turn it glided down some distance and then fell just inside the German lines. On August 31st Captain Rees, with Flight-Sergeant Hargreaves, fought a powerful German machine for three-quarters of an hour. They then returned for more ammunition and went out again to the attack. Finally the enemy's machine was brought down apparently wrecked.

* * *

From the "London Gazette," November 19th, 1915.

ADMIRALTY, November 18th.

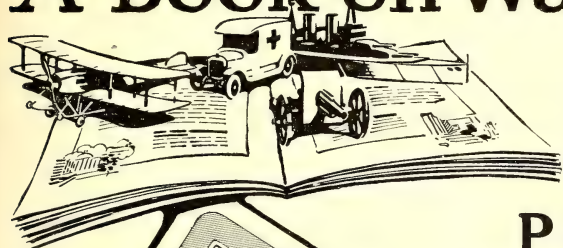
ROYAL NAVAL AIR SERVICE.—Prob. Flight Sub-Lieut. for temp. service W. G. McMinnies confirmed in rank of flight sub-lieut. for temp. service. August 11th.

WAR OFFICE, November 19th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Comd.: Capt. (temp. Lieut.-Col.) D. Le G. Pitcher, 30th K.G.O. Cent. India Co., I.A., from asst. commt., Cent. Flying School, and retain temp. rank whilst so employed, November 15th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—R. W. Le Gallais, sec. lieut., R. M. of I. of Jersey, to be sec. lieut. (on prob.) November 6th.

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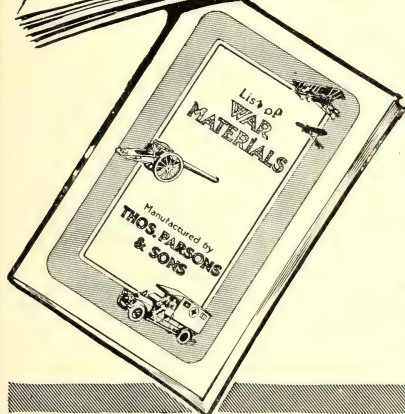
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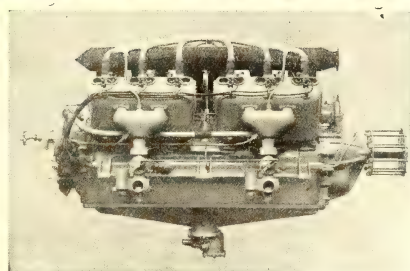


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A Supplement to the "London Gazette," issued on November 19th, contains a list of honours conferred on naval officers and men. The following are concerned with the R.N.A.S. :—

DISTINGUISHED SERVICE ORDER.

The King has been graciously pleased to give orders for the appointment of the undermentioned officer to be a Companion of the Distinguished Service Order :—

Flight Lieutenant **GEORGE BENTLEY DACRE, R.N.**

For his services in the Dardanelles when he flew over the Gallipoli Peninsula, and in spite of serious trouble with his machine succeeded in carrying out a difficult operation, and afterwards returned safely to his base. Great nerve and courage were displayed in prosecuting an attack under very adverse conditions.

DISTINGUISHED SERVICE CROSS.

The King has further been graciously pleased to give orders for the award of the Distinguished Service Cross to the undermentioned officer :—

Lieutenant **JAMES CADMAN, R.N.V.R.**

For coolness and daring in charge of armoured cars under very severe shell and shrapnel fire from May 12th to 14th, 1915.

DISTINGUISHED SERVICE MEDAL.

For services in the Gallipoli Peninsula the Distinguished Service Medal has been awarded to the following :—

Petty Officer **F. W. Johnstone, O.N.1930**; Petty Officer **G. O. Westmuckett, O.N.829**; Chief Petty Officer **A. Trussell, O.N.1175**; Petty Officer **G. Beresford, O.N.1429**; Petty Officer **C. J. Hollingshurst, O.N.1386**. All of No. 10 Squadron, R.N. Armoured Car Section.

From the "London Gazette" Supplement, November 20th, 1915.

WAR OFFICE, November 22nd.
ROYAL FLYING CORPS, CENTRAL FLYING SCHOOL.—Asst. Comm. (graded as Wing Com.): Capt. (temp. Maj.) **C. G. Hoare, 39th K.G.O. Cent. India H. I.A.,** a sqdn. com., Mil. Wing, and to be temp. lieut.-col. whilst so employed, vice Capt. (temp. Lieut.-Col.) **D. Le G. Pitcher, 39th K.G.O. Cent. India H. I.A.** November 15th.

From the "London Gazette" Supplement, Nov. 22nd, 1915.

WAR OFFICE, November 22nd.
REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers :—November 9th: Sec. Lieut. **M. D. Basden, London, T.F.;** Sec. Lieut. **W. M. Pethybridge, S.R.**

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: **E. W. Barrett, E. A. Kelly, W. M. Pethybridge.**

To be Sec. Lieuts. (on prob.). October 27th: **F. A. Garlick, W. S. R. Bloomfield, E. Henty, R. L. Burdon-Sanderson.** October 29th: **E. H. Robinson, November 22nd.**

MEMORANDUM.—First Class Air Mechanic C. H. Chapman, from Royal Flying Corps: September 30th, 1915. To be Temp. Sec. Lieut.

NAVAL.

The following appointments were notified at the Admiralty on November 16th :—

ROYAL NAVAL AIR SERVICE.—Flight Lieut. **E. F. Bray's** commission and appointment as flight lieut. terminated November 15th, and granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., (for E) duties, to date November 15th.

The following have been granted temporary commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., all with seniority, November 15th: **G. ... Gawler, G. R. Turner, and A. R. Griggs.**

Mr. H. Rampling entered as probationary flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 17th.

The following appointment was notified at the Admiralty on November 17th :—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut. **R. M. Clifford,** to the "Empress," vice **Duan, Calshot Seaplane Station,** to date November 16th.

The following appointments were notified at the Admiralty on November 18th :—

ROYAL NAVAL AIR SERVICE.—Lieut., R.N.V.R., **G. Holmes** promoted to the rank of lieut.-com., R.N.V.R., with seniority, November 16th.

Temp. Sub-Lieut., R.N.V.R., **A. C. Wade** promoted to the rank of temp. lieut., R.N.V.R., with seniority, November 16th. Asst. Paytr., R.N., **D. R. Thurstan** granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date November 16th.

Temp. Prob. Flight Sub-Lieut.: **R. Spickernell** and **G. G. Domville** granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date November 17th.

Mr. A. F. Wilson entered as prob. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 22nd.

Late Prob. Flight Sub-Lieut. **L. Gresley** reinstated in the R.N.A.S. as prob. flight sub-lieut., with seniority, November 14th, and appointed to the "President" for R.N.A.S., to date November 14th.

The following appointments were notified at the Admiralty on November 19th :—

ROYAL NAVAL AIR SERVICE.—Mr. **V. Hewett** granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for inspectional duties, to date November 18th.

Sub-Lieut., R.N.V.R., **H. C. Woodward** promoted to the rank of lieut., R.N.V.R., with seniority, November 17th.

The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date November 18th: **N. M. Clougher and P. R. S. Walford.**

The following have been entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as mentioned: **I. N. Carmichael, G. L. Hartgill, S. J. Wooley, D. Aitken, E. R. Pritchard, J. S. N. Bockley, S. E. Ball, P. A. F. Belton, D. E. Harkness, and J. H. Woolner,** November 22nd; **E. J. Cuckney,** November 17th.

The following appointments were notified at the Admiralty on November 22nd :—

ASSISTANT PAYMASTERS.—**S. Finnis,** to "Ark Royal," as Acting Paymaster, vice **Evens,** both to date November 20th.

ROYAL NAVAL VOLUNTEER RESERVE.—Temporary Lieutenant.—**C. Kirby,** to "President," additional, for R.N.A.S., Nov. 8th.

NAVAL.

The Secretary of the Admiralty announced on November 16th that the following officer, previously reported missing, is now officially reported a prisoner of war :—

Flight Lieut. **Lionel D. McKean, R.N.** (Assistant Paymaster, R.N.).

On the same date the following appeared :—

Previously reported Missing, now unofficially reported Wounded and Prisoner of War.

Shields, H. G., Air Mech., 2nd Grade, F.7582.

Mr. Churchill, M.P., who was accompanied by Mrs. Churchill, was presented on November 16th by Lieut.-Comm. **Wedgwood, R.N.V.R., M.P.,** on behalf of the officers and men of the Armoured Car Division of the Royal Naval Division, with his portrait painted by Mr. John Lavery. The presentation took place in the presence of a large number of subscribers, including Lieut.-Comm. **Locker-Lampson, R.N.V.R., M.P., Mr. Joseph King, M.P., Dr. Lynch, M.P., Mr. O'Malley, M.P., Lieut.-Comm. Perrin, R.N.V.R., Lieut.-Comm. Gregory, R.N., Lieut.-Comm. Whittall, R.N.V.R.,** and others.

Lieut.-Comm. **Wedgwood** said that the occasion was a happy one, in that it coincided with the re-establishment of the position both as politician and as a strategist of the man whom they honoured. It was neither the time nor the place to speak of Mr. Churchill's work for the world at large. They were simply there as officers of the armoured-car force which Mr. Churchill equipped, and forced upon the country, and established as a valuable weapon of offence throughout Europe. He recalled the occasion when Mr. Churchill, having got the Royal Naval Air Service on its legs, established a land force to co-operate with it, and assist, as it was intended, in keeping the remains of

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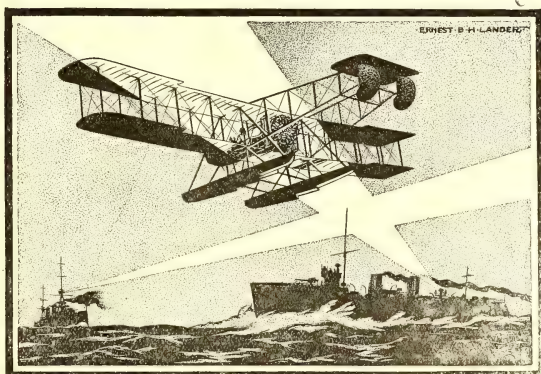
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Belgium clear of the Germans. It was early in September, 1914. In September and in October of that year so great was the energy of Mr. Churchill that the cars were already in the field. They were in Lille, Tournai, and Douai; they were in Antwerp and along the Scheldt. Wherever there was fighting there were armoured cars. When the work of the armoured cars was checked by trench warfare they appeared in South-West Africa, in East Africa, and in France with great advantage to the fighting forces. In South Africa they overcame tremendous difficulties in the way of sand and of waterless country. They fought at Driefontein, and decided a skirmish in favour of the English forces.

Lieut.-Comm. Locker-Lampson congratulated Lieut.-Comm. Wedgwood on winning the D.S.O., and said that the armoured-car force meant to leave its mark upon the country. They owed it all to the enterprise and initiative of Mr. Churchill, and it was a great blow to think that the energy, initiative, enterprise, and imagination of such a man was not being used by our country at this terrible time. But though the nation would lose him in this country the Army would gain him in France. (Cheers.) He ventured to prophesy that the time was coming very soon when Mr. Churchill would occupy a prouder position in the hearts of his countrymen and in the councils of the Empire than he had ever occupied hitherto. (Cheers.)

Mr. Churchill, in reply, said that he was greatly touched by the kindness of the two speeches to which he had listened and by the presentation which had been made. He felt that the armoured-car service had justified its creation. The course of the war in the West had not been of the character to give the proper scope to engines of this kind. They were devised at a time when the right flank of the German advance was open and exposed to attacks from the sea coast to work in conjunction with the aeroplane squadron which the Admiralty was asked in the beginning of the war to maintain in France and Flanders. But still, in spite of the conditions which had ruled, the cars had made themselves extremely useful and valuable. If ever the lines should break either in a favourable or in an unfavourable direction the use of the armoured cars would be appreciated even more widely than at present.

[Mr. Churchill's words should be noted with care. If we have to retreat anywhere in a civilised country and armoured cars are not there to help fight rearguard actions, or to harass the flanks of any enemy forces which break through, it will not be Mr. Churchill's fault, and someone ought to swing for it. In a great advance, for which we hope some day, armoured cars would also be of great assistance.—Ed.]

The many friends of Mrs. de Beauvoir Stocks will be pleased to hear that her husband, Lieut.-Commander David de Beauvoir Stocks, R.N., has been appointed to the Distinguished Service Order for his services in command of a submarine in the Sea of Marmora, where he made a prolonged cruise in spite of adverse conditions, and succeeded in inflicting much damage on the enemy.

A sailor on a river gunboat, describing the action at Kut-al-Amara, in a letter reproduced in the "Morning Post," says:—

"Immediately after this a seaplane glided down into the river and the pilot came alongside us and told the captain he had a map to explain. They got out and came on board. The consultation between the two officers was brief. We soon knew what the seaplane's mission was to us. It was orders for us to go under the enemy's nose under cover of darkness and destroy an obstruction near the town, which was there to prevent us from going farther up the river."

[This is the first time the censorship has permitted mention of the use of seaplanes in the Mesopotamian operations.—Ed.]

Colonel Sir Mark Sykes, describing the motley fleet on the Tigris, in the Mesopotamian war, says:—

"There is also a ship which is said to have started life as an aeroplane in Singapore, shed its wings, but kept its aerial propeller, took to water, and became a hospital; its progress is attended by a sustained series of detonations which serves it as an escort among the Arabs, who attribute its method of progress to Iblis alone."

[This is probably the first use of a "glisseur," or water-glider, in war. Of course, the machine was never really an aeroplane.—Ed.]

The following appeared on November 10th:—

A marriage has been arranged, and will shortly take place, very quietly, at Bentley, between Flight-Commander Lancelot Tomkinson, Royal Navy, youngest son of Mr. and Mrs. Frederick Tomkinson, of Silverton Lodge, Upper Norwood, and Doris Gosnall Turner, fourth daughter of Mr. and Mrs. Hugh Turner, of Bentley, Suffolk.

The following appeared in the births columns of November 16th:—

WINDELER.—On November 14th, at 21, Eldon Road, Kensington, W., the wife of Acting Flight Lieutenant B. Cyril Windeler, R.N., commanding Kite Balloon Section, H.M.S. "Canning," of a daughter.

The following passage in the telegraphic dispatch, dated General Headquarters, 7.7 p.m., on November 18th, from Field-Marshal Sir John French, deals with aircraft:—

Recently, when carrying out a patrol, one of our airmen engaged a German aeroplane at close quarters and forced it to land heavily in a ploughed field behind the German lines. Our airman, diving within 500 ft. of the ground, opened a heavy fire on the pilot and observer, who had left the aeroplane and were making off across country. He also dropped an incendiary bomb on the German aeroplane, which, when last seen, was enveloped in smoke. Our machine was damaged by the enemy's fire and forced to land 500 yards behind our trenches, where it was heavily shelled by the enemy, but was not again struck. The pilot replaced his tank during the night and succeeded in bringing his machine safely home at dawn.

The following passage in the telegraphic dispatch dated General Headquarters, 7.14 p.m., on November 22nd, refer to aircraft:—

A German aeroplane landed in our lines south-west of Ypres on the 19th. The pilot and observer, who stated they had lost their way, were captured. The machine was undamaged.

The enemy made air raids on Poperinghe on the 18th and 20th. No damage whatever was done to the railway or to any buildings. In the first raid two soldiers were wounded and four cows killed. In the second raid one bomb caused casualties to eight men; none of the others had any effect.

The General Officer Commanding at the Dardanelles reports that two British aeroplanes successfully attacked the railway station at Ferejick, near Enos, on November 19th. One machine was unfortunately brought down by the enemy's fire, but the pilot managed to land safely in the marshes on the opposite side of the river, where he burnt his machine. Meanwhile, the pilot of the second aeroplane, who was alone, seeing his friend's mishap, landed beside him and succeeded in bringing him away just in time to escape capture by the enemy, who were running towards him.

[The machines and pilots may have belonged to the

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Navy, but being under military command the information pertains to Army matters.—Ed.]

* * *

The following casualties in the Expeditionary Force were reported on November 16th, under date November 11th :—

WOUNDED.

Sec. Lieut. L. J. Bayly, Royal Garrison Artillery, attd. Royal Flying Corps.

Sec. Lieut. C. C. Miles, Royal Flying Corps.

MISSING.

Sec. Lieut. A. W. Brown, 3rd Manchester and Royal Flying Corps.

Sec. Lieut. H. W. Medlicott, Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on November 17th, under date November 12th :—

MISSING.

Sec. Lieut. V. M. Grantham, Royal Flying Corps.

Lieut. W. A. Harvey, 4th Norfolk (T.F.), attd. Royal Flying Corps.

Sec. Lieut. J. E. P. Howey, Bedfordshire Yeomanry, attd. Royal Flying Corps.

Sec. Lieut. C. H. Kilway-Bamber, General List and Royal Flying Corps.

*Previously reported Missing, now reported
Died of Wounds.*

Sec. Lieut. J. Gay, Royal Flying Corps.

Sec. Lieut. J. Gay was the only son of Dr. and Mrs. Gay, of Putney. He was educated at Felsted, was a medical student at St. Bartholomew's Hospital, and a member of the City of London Yeomanry. Last March he was given a commission in the Special Reserve, Royal Flying Corps, and served in France four months before he was fatally wounded while taking photographs over the German lines.

* * *

The following was reported on November 19th :—

*Previously reported Missing, now reported
Prisoner of War.*

Sec. Lieut. B. Wilkin, Duke of Cornwall's L.I., attd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on November 22nd under date November 15th :—

WOUNDED.

Ashby, Lieut. G. S. M., R.G.A. and Royal Flying Corps.

Corbett, Sec. Lieut. R., W. Somerset Yeomanry, attd. Royal Flying Corps.

Filley, Lieut. O. D., Royal Flying Corps.

Reported under date November 16th :—

Previously officially reported Missing, now unofficially reported Died of Wounds.

Washington, Sec. Lieut. J. N., Manchester Regt. and Royal Flying Corps.

Second Lieutenant J. N. Washington gained his commission in the Manchester Regiment in May of this year, and was appointed to the Royal Flying Corps in August.

* * *

The following casualty in the Indian Forces was reported on November 22nd without date :—

PERSIAN GULF.

Officer officially reported Missing and unofficially reported Prisoner of War.

Yeats-Brown, Capt. F. C. C., 17th Cavalry, attd. Royal Flying Corps.

* * *

An Army Order issued on November 10th sets forth that from October 16th last, for the remaining period of the war, officers who are qualified balloon pilots, and are serving with the Kite Balloon Section of the Royal Flying Corps (Military Wing), shall be entitled to receive continuous flying pay at the rates laid down for flying officers in the Warrant of December 1st, 1914.

* * *

The following notice appeared on Nov. 17th :—

IN MEMORIAM.

BUSK.—On November 5th, 1914. In memory of Lieutenant Edward T. Busk, London Electrical Engineers, R.E. (T), who was killed instantaneously in mid-air by the explosion of a bomb while experimenting with bombs over the Aerodrome of the Royal Aircraft Factory, Farnborough. Not burnt to death by his aeroplane catching fire, as previously stated.

[It seems quite possible that a bomb in the machine may have been exploded by a fire started by a defect in the engine.—Ed.]

* * *

The following appeared in the "Daily Chronicle" of November 19th :—

MARSHALL—SCOTT.—On November 16th, at the Church of the Good Shepherd, Tadworth, by the Rev. Canon Gouldsmith, Rector of Bishopwearmouth, uncle of the bridegroom, assisted by the Rev. A. J. Wethered, Vicar of the Parish, Reginald Henry Marshall, Lieut., 3rd Batt. Northamptonshire Regt., attached Royal



ON THE FIELD OF HONOUR.—The Sergeant-Aviateur Dr ouet, pilot of the twin-engine Caudron illustrated recently, being invested with the Médaille Militaire.

Flying Corps, third son of E. E. Marshall, of Burgh Heath, Surrey, to Winifred Hooper, youngest daughter of Walter Scott, of Mostyn, Tadworth.

* * *

The following announcement appeared on November 11th:—

The marriage arranged between Colonel J. H. W. Becke, of the Royal Flying Corps, and Ann, daughter of Mr. and Mrs. Shaw Adamson, Careston Castle, Dorsetshire, will take place early in December very quietly on account of family bereavement.

* * *

It is stated that Captain Mulcahy Morgan, R.F.C., hitherto a prisoner at Limburg, has been transferred to Frankfurt.

* * *

The "Daily Telegraph" of November 11th publishes the following letter, which also appears in the "Eton College Chronicle":—

"Capt. Robert Loraine and Lieut. the Hon. Eric Lubbock have been awarded the Military Cross for a plucky and successful fight they put up in mid-air. A graphic description of the incident is given in the following extracts from letters sent to another old Etonian by Lieut. Lubbock:—

"Yesterday Loraine and I had an exciting adventure. We sighted a German about four miles off and attacked. We both opened fire at about fifty yards. I fired again at about twenty-five, firing twenty-six rounds, and then my gun jammed. I heard Loraine give a great shout, but felt neither fear nor triumph. Then our machine turned downwards. As I had fired my last shot I had seen the German turn down. I knew that if he got below us, my machine-gun was the only one that could fire at him. We were diving, I standing almost on the front of the body. Then we turned level. I finished my gun, but there was no German! But our guns (Loraine's and mine) had jammed at the same moment. I spent another five minutes at Loraine's gun, and finally got both done.

"We saw another enemy aeroplane coming in the distance. Loraine went all out to climb and attack, while I put my stiff and aching hands in my mouth praying for sufficient life to come back to them—they were frozen. Then our engine stopped, and we were helpless, so we turned and glided homewards. Unable to reach the aerodrome we landed in plough, a beautiful landing. The luckless Boche fell twenty yards behind our front line trench. The pilot was shot through the stomach; the observer, a boy of 17, had his head grazed. In spite of his fall he will be all right, but yesterday he was crying and absolutely nerve broken. No wonder, poor thing. The pilot was dead before they got him away.

"On the machine was found an old machine-gun. It had been taken from the Canadians months ago, and now has come back to them. It is absolutely unfit for aeroplane work, being three times as heavy as the one we use, and having lots of other technical drawbacks. There was a camera with a Zeiss lens, which will be most valuable to us; although the camera was pierced by two bullets. There were some plates which are being developed at this moment. The camera is heavy and clumsy, not a patch on ours. It is such that you cannot take a vertical photograph. There was a carbine, a very nice weapon, and a pistol for firing coloured lights, which had been hit by us and spoiled. There was also a priceless pair of binoculars, magnifying eighteen times. I am to take all these things myself to the General Headquarters, which makes me very shy.

"The German observer says he was going to understand that we tortured all our prisoners, and wondered when it was going to be over. He was also much surprised to hear that he was going to be taken to England, as the German Navy has control of all the seas, and England is completely cut off! Now one can understand why they go on fighting."

[It is really rather rough on Mr. Lubbock to publish his letter, but it is such good reading that he must blame his friend and not the "Telegraph" or this paper when he sees it in print. One can see a fractured friendship in the offing.—Ed.]



AT THE GRAHAME-WHITE NAVAL SCHOOL OF FLYING. —Back row, left to right, Mr. A. Murray Ross (Manager), Flight Sub-Lieut. R. Graham, M. Osipenko, Flight Sub-Lieut. H. G. T. Saint, Mr. M. D. Manton, Flight Sub-Lieut. R. N. Davenport. Front row, Flight Sub-Lieut. R. H. Horniman, Flight Sub-Lieut. W. H. S. Apin, Flight Sub-Lieut. G. R. Moody, Flight Sub-Lieut. B. C. H. Cross, Flight Sub-Lieut. F. A. R. Mallet.

Mr. Prevost Battersby, writing in the "Morning Post" from G.H.Q., says:—

"Aeroplane tactics appear to be undergoing some modification. In the early months of the war the upper berth was as eagerly striven for as was the weather berth by the old line of battle ship. Now it is quite usual to see a pilot deliberately sacrifice that position, and, diving beneath an antagonist, rake his plane with fire as he swings across its bow.

"The mounting of the machine-gun in some of the French monoplanes, so high above the structure that the observer fires, standing, over the extreme tip of the propeller, may also influence the style of fighting; but the position is not, for several reasons, universally admired, and seems hardly to possess compensating advantages for its defects."

* * *

At Epping, on November 19th, Cæsar Schlesinger, of Loughton Hall, Loughton, was summoned by the Loughton Urban District Council for keeping an excessive supply of petroleum, contrary to statute. Mr. L. W. Liell, for the Council, said that reports had been current in the district that an excessive quantity of petrol was being stored somewhere. Information was received by the Council that a large quantity had been discovered stored in a shrubbery near the defendant's garage, and these proceedings were at once taken. There were thirty-six cases found, each containing four two-gallon tins, Mr. Liell added.

Mr. Conway Wertheimer, who appeared for defendant, pleaded guilty, and said a genuine mistake had been made. Defendant told his London agent to order a certain number of tins. Cases instead of tins were sent. He took steps to have the excess taken back, but there was some delay. In the meantime, members of the "Army Flying Corps" (*sic*) went to Loughton Hall for hospitality, and, seeing his petrol, properly informed the authorities. The petrol was put into the shrubbery by the chauffeur for greater safety, and it had now been taken away. Counsel added that the defendant was formerly of German nationality, but he had been naturalised in England for many years, and thirty years ago was denationalised in Germany. He married an English lady.

Defendant gave evidence, and the Bench, stating that they would treat it as an ordinary case under the Act, fined him 20s.

[Somehow the action of the officers of the "Army Flying Corps" seems a poor return for hospitality received. One can merely suggest that in future young officers refrain from visiting those who live in what the earlier generation of R.F.C. officers classed as "Jew-Palaces." One may explain that the term arose from the custom of *certain* officers who, when in need of refreshment on a cross-country trip, would look for the biggest house in the district and land in its grounds, the chances being that it belonged to a Hebrew, who would naturally be hospitable to anyone so distinguished as a flying officer. To the credit of the Semitic race, be it said, these officers were very seldom mistaken in their calculations.—Ed.]

FRANCE.

The communiqué of November 19th says:—

Eight enemy aircraft yesterday attempted to fly over Lunéville. They were pursued, and five of them turned back. The other three dropped some bombs on the town. Three persons were wounded. The material damage done was of little importance.

* * *

A telegram from Paris on November 16th stated that a German aeroplane dropped several bombs on a suburb of Dunkirk on November 15th. Four persons were killed and nine injured.

* * *

It is now known that the recent raid on Stuttgart was

carried out by the former Hendon pilot, Henri Salmét, and by the Sapeur-aviateur Prévost, who is a cousin of Marcel Prévost, the popular Dep. pilot. Both flew twin-engine Caudron biplanes with Le Rhône motors. The day before this raid Salmét had started alone with a big load of bombs, and without a passenger. Soon after starting he was attacked by four German biplanes and escaped by climbing away above them—an almost unheard-of performance for one of the Allies' machines, especially with a big load of bombs. However, he returned as he considered that he needed some weapon of defence, and next day he took up a passenger and a machine-gun, but fewer bombs.

The raid was very successful, and for it M. Salmét was awarded the Médaille Militaire, and was promoted to Adjutant-aviateur. It is indeed pleasing to see all our Anglo-French pilots distinguishing themselves with such unflinching regularity.

* * *

One learns with regret of the death in an aerial combat of Lieut. Gobron, son of the founder of the Gobron-Brillié Motor firm. It is not clear whether the deceased officer is M. Jean Gobron, who flew a Voisin at the great Reims Meeting of 1909, but it seems only too probable.

GERMANY.

The communiqué of November 19th says:—

A German air squadron attacked the British Army encampment west of Poperinghe.

* * *

The "Ribe Stiftstidende" of Copenhagen stated on November 20th that on November 17th, about 9 a.m., in the neighbourhood of Tønder (Schleswig-Holstein) Zeppelin "Z 18," which had recently arrived there, was being inflated, when there was a violent explosion, the cause of which remains unknown. The Zeppelin was completely destroyed. The shed was considerably damaged. The story may, of course, be a complete fabrication, founded on the destruction of one of our airships at Wormwood Scrubs some months ago.

Circumstantial details were sent from Copenhagen on November 21st by Reuter, who says:—

"The Zeppelin had only done a single trip westward over the island of Sylt before it was destroyed. The shed housing the airship was completed just before the disaster occurred, and only a few alterations were required on the roof, where platforms originally fixed for anti-aircraft guns were being moved aside in accordance with a new scheme, and placed on the ground at the four corners of the huge shed, which occupies nearly an acre. A number of marines assisted the workmen in getting the roof ready, and despite stringent orders to the contrary, several men smoked cigars. It is reported that one man dropped a burning cigar on the top of the envelope of the airship, resulting in an immediate explosion which killed or injured eleven men." [This is quite one of the funniest stories Reuter has sent. The story about shifting the guns seems reasonable, but the notion of even the worst and most sulphurous German cigar burning its way through the thick fabric of a Zeppelin, falling through feet of air inside it, and then burning through the webbing lifting bands, and the rubber gas envelope as well suggests a breed of cigar of a pertinacity unimaginable.—Ed.]

"The loss is being kept profoundly secret. Since Wednesday no information has been given to the Press in Schleswig or elsewhere, and no passports from Tønder were issued until yesterday."

RUSSIA.

The communiqué of November 17th says:—

A Zeppelin which flew over the Dwinsk district on the night of the 15th dropped bombs, some of which fell in the German trenches, causing heavy losses and a panic among the Germans.

* * *

It was reported from Petrograd on November 16th that

M. Zvegintzeff, a well-known member of the Octobrist Party in the Duma, has been killed at the front. According to one report he met his death while making a flight in an aeroplane, while according to another version he was killed by a bomb thrown from an enemy aeroplane.

AUSTRIA.

The naval communiqué of November 18th says:—

One of our seaplane squadrons successfully dropped bombs on forts San Nicolo and Alberoni, the arsenal, the aviation station, the gasometer, the railway station, and several barracks at Venice. Despite a heavy fire from anti-aircraft guns and attacks by three hostile aeroplanes, our squadron returned completely undamaged.

ITALY.

The communiqué of November 17th says:—

Enemy aeroplanes yesterday dropped bombs on Ala, but no damage was done, and there were no victims.

The communiqué of November 19th says:—

Enemy aeroplanes yesterday dropped bombs on Verona, where four citizens were injured, and on Vicenza and Grado, where there were no victims and no damage was done.

Another enemy squadron dropped fifteen bombs on Udine, killing twelve citizens and wounding nineteen, besides eight soldiers, and also causing some damage.

The communiqué of November 21st says:—

One of our flying squadrons, under the most adverse atmospheric conditions imaginable, and in the teeth of a tempestuous wind, renewed the incursion on the enemy's aviation camp at Alcevizza, on which over 100 bombs were again dropped. Our machines returned unharmed to our lines.—(Signed) CADORNA.

It was semi-officially announced in Rome on November 14th that three Austrian aeroplanes dropped 15 bombs on Verona, 30 persons being killed, and 29 seriously and 19 slightly injured. Various parts of the town were struck, but the Piazza d'Erbe, the chief square, where the market was being held, suffered most. One bomb alone which fell here killed 19 persons. The damage to property is not important.

A message from Rome dated November 17th says that an Austrian aeroplane flew over Belluno at 8 a.m. and dropped five bombs, but only one exploded. Three persons were injured. There was no material damage.

Judging from several official denials of recent enemy communiqués which the Stefani agency has been authorised to circulate, it seems clear that Italy is taking her obligations not to bomb non-combatants very seriously. Miramare, for example, "was not subjected to attack by Italian aircraft of any kind," "nor was the city of Gorizia." Troops encamped at Savogana in flat country to the south of Gorizia were, however, severely dealt with by a dirigible.

Our Ally is not anxious, of course, to destroy her future possessions or kill the few civilian inhabitants thereof still uninterned.

Guglielmo Marconi (I leave his titles, degrees and ranks to official documents), on returning to Italy, has given the public some of his impressions of the internal conditions of his country's big Allies. He assisted at two raids over the "London area" from a good central—not Hotel Central—point of vantage, and tells how his window was smashed and he was put to inconvenience like other folk. Asked why the raider was not brought down, he suggested that "too many cooks spoil, etc.," meaning that so many missiles were projected simultaneously that the A.A. gunners were unable to rectify their aim because unable to discover how far it was inaccurate. As a soldier, he

could naturally disclose nothing as to usefulness of wireless, but assured his interviewer that though personally he had made no tests of the possible effect of radio-telegraphic action on motors, he yet could not deny that there might be something in it. Switched off from 200 miles away, magneto shorted from across the Atlantic, etc..

Some points in another interview, appearing in a Berlin paper, are of some interest.

The personage is that Austrian pilot who recently made the dash for Brescia and Venice, from Riva apparently. Incidentally he is made to believe the official account of the affair, and is probably telling the truth. Mounted on a "Lloyd" (?) "plane with 200 h.p. fixed motor, he and the observer narrowly escaped capture. Indeed, but for the possibility of adjusting the motor during a glide, the same would have become a grateful windfall to the Italian Aero Corps. The habit of booming themselves seems general among the enemy's successful raiders. Is it prescribed or merely permitted by regulations? Anyhow, it leads one to thought. Possibly there is rivalry between h.t.a. and l.t.a. services. Or are there shekels to be sucked thereout, or other small advantages?

By a recent military bulletin I learn that Capt. Verdizio, who was by the vulgar crowd considered as the moving spirit in the construction of the V dirigible, has been transferred to the Technical Managing Department of Military Aviation.

By-the-by, and by many other signs, some one should, and probably will not, learn that war time is not the time for experimenting with big airships. Here is one of the greatest lessons knocked into the world by this war. Let this knowledge be applied in due season.

Owing to a bad landing, one of the new (two-seater) 80 Caudrons was fairly "done in" at Mirafiori on the 10th inst., with two sub-lieutenants on board, it seems. Full particulars of the accident have not yet reached me. As it is, the news to hand is bad enough.

The promotion of 1st Capt. Crocco to be Major Crocco is announced. Capt. Crocco had a very large hand in the designing of the Italian military airships. His studies on dynamics, stability-fins, etc., are well known to the learned of all countries.

A number of flight-lieutenants, of most of whom your papers have treated, have reaped the reward of their labours by promotion, announced concurrently with the above.

Raids on Brescia, Verona, Belluno, and Venice in quick succession have, of course, caused public opinion to call for reprisals. Italy's aerial warfare, as I wrote before, is now declared to have been too "good" to her enemies.

Particulars of the attack on Verona make pitiable reading, although no material damage was done. One big bomb fell into a thickly packed crowd of market women and their children.

The raid, which took place at 8 a.m. on the 14th inst., is said to have been entrusted to a flight of five machines from a depot beyond Rovereto—two of which luckily lost their way in the fog. The three seen were protected by armouring, and showed no respect for hospitals, churches, or art. On the authority of a leading daily, the bombs were also poisoned. Hydro-aeros from Garda ultimately came up and hastened the Austro-Germans' return trip. The liveliness of their air forces and the effectiveness of their bombing visits is as undeniable as is the uselessness of present A.A. efforts to protect cities against them.—T. S. HARVEY.

BELGIUM.

A Belgian official statement published in the London papers of November 20th says:—

In the course of the two preceding nights our aviators bombarded the German cantonments at Essen.

[It may be taken for a fact that the place bombarded is not Essen in Germany, but a small town only a few miles behind the German lines.—Ed.]

BULGARIA

Sofia, via Berlin-Zurich (Ananias?).

The Zeppelin which brought the Duke of Mecklenburg to Sofia arrived at 10 a.m. "after a nine hours' journey."

With the greatest difficulty H.R.H. was got out of her, owing to the absence of troops trained to landing manoeuvres. In fact, this part of the proceedings seems to have been rather a fiasco. Several attempts had to be made before the vessel could be got down. Once she lifted away with a soldier hanging to a guide rope.

However, finally, at 2 p.m., the "meeting by land, sea, and air" was accomplished, and the airship was able to leave.—T. S. H.

HOLLAND.

It was reported from Amsterdam on November 9th that a German captive balloon which landed near Biggekerke has been seized by the Dutch military authorities.

* * *

It was reported from Amsterdam that at 4 p.m. on November 21st a German seaplane flew over Dutch waters off the Island of Schiermonnikoog. It was fired at by the Dutch coastguard, but was not hit. The seaplane, No. 205, is said to have landed on the island. The machine and its two occupants were put under guard.

The German Government has tendered apologies to the Dutch Minister in Berlin concerning the violation of Dutch neutrality by two German aeroplanes, which flew over Dutch territory on October 14th. The German Government explained that the pilots were lost in a fog.

SWITZERLAND.

The five unfortunate French aviators till now interned at Hosphenthal have been transferred to Zurich in the more Teutonic part of Switzerland—so that they may walk about more freely. Hosphenthal is probably under snow by now. M. Gilbert was credited with complaining of the excessively sympathetic interest shown in them once before. It all comes of wearing uniform, without which they more easily escape.—T. S. H.

SERVIA.

The continuous flying of the Allies' aeroplanes over their enemies' lines is stated to be cheering up the Serbs immensely. So the "Temps" special correspondent at Rashka.—T. S. H.

DENMARK.

THE AEROPLANE'S Danish correspondent writes:—

In these record-lacking times interest may arise about a peculiar one taking place the other day at the Copenhagen military aerodrome, when five pupils took their certifications in succession on Maurice Farman biplane, four of them having never flown alone before. Only one of them had to repeat a flight of five times 8 figures. The pupils were gathered from volunteers of all ranks of the army for a flying reserve, each two lieutenants, two sergeants and two privates being selected, and the sixth man is ready for his ticket in a few days.

Combining his serving his time as a soldier with his flying experience in Germany, where he took his ticket, Mr. Paul Pollner has, after probation, been appointed second lieutenant, recently carrying out the altitude test, attaining about 6,900 feet, and the overland flights for the military superior brevet.

A circle of women of Sealand has presented the 2nd headquarters of Jylland with a 80 h.p. Morane monoplane, Swedish-built at Dr. Thulin's aircraft works in Landskrona, the pilot to be Lieut. Stockfleth of the Dragoons.—Ht.

SWEDEN.

It was reported from Stockholm on November 20th that at a meeting of the Swedish Anthropological and Geographical Society last night Dr. Erik Mjoeberg gave an account of plans for an expedition into the unknown regions of the Island of New Guinea, assisted by aeroplanes. He said he intended to take out a Farman machine capable of carrying five persons and at least 1,000 lbs of stores, and also a smaller aeroplane to find likely landing places in the interior. The heavier machine would follow, and a regular service would be established between the landing stations and the headquarters on the coast. [This idea is perfectly sound.—Ed.]

TURKEY.

The Constantinople communiqué of November 20th says:—

On the Irak front we shot down and captured a second enemy aeroplane.

* * *

A report from Amsterdam says that according to a message from Baghdad, via Constantinople, Bedouins have brought down a British aeroplane, and have taken the occupants prisoners. The aeroplane can be repaired and again employed for service.

[This may be a belated report of the capture of Capt. Merz, of the Australian Flying Corps, who is said to have been tortured to death by Bedouins after his machine had let him down in the desert. Or it may refer to Lieut. Treloar, who was also captured.—Ed.]

EGYPT.

According to a Danish paper, Baron Slatin Pasha, speaking of a fresh invasion of Egypt, says that it will be possible for the Central Powers, by means of a Zeppelin bombardment, to destroy the locks of the Suez Canal and to stop all traffic through it. [Assuming, of course, that they get within Zeppelin range of Egypt and manage to get to the Canal in daylight without being hit.—Ed.]

SOUTH AFRICA.

The "Cape Weekly Times" publishes the following:

Pretoria, September 30th.

The following has been officially communicated to the Press from the Defence Headquarters:

Royal Flying Corps.—Applications are invited for a limited number of men, with the following qualifications, to complete the personnel of the South African Squadron of the Royal Flying Corps: Wireless operators, cooks, coppersmiths, motor cyclists, sailmakers, electricians, riggers, fitters, turners, motor mechanics, and instrument repairers.

The rates of pay will be: Warrant officer, 9s.; flight sergeant, 7s.; sergeant, 6s.; corporal, 5s.; 1st air mechanic, 4s.; 2nd air mechanic, 2s.

Applications should be made in person to Captain Batten, Adjutant, S.A. Aviation Corps, at the Drill Hall, Johannesburg, on Tuesday, October 5th; at the Recruiting Office, Town Hall, Pretoria, on Wednesday, October 6th; and at the Recruiting Office, City Hall, Cape Town, on and after October 17th. Applicants must bring testimonials or other documents, certifying that they are qualified mechanics. Separation allowances for wives and families and allowances for dependents of men enlisting in this corps will be as published in the Press for the South African Overseas Expeditionary Force.

AUSTRALIA.

The first aero-engine to be built in Australia made its first run on the test bench on August 28th, and its preliminary performance seems to have been satisfactory, although, of course, as the maker of another aero-motor tersely put it, it is impossible to determine the merits of an engine until it is married to an aeroplane.

This engine was built by the Sydney Tarrant Motors Proprietary, Ltd., and in view of the initial difficulties involved in getting the right alloys for the crank-case and in making special machine tools, the firm seems to have done very well. After exhaustive experiments an aluminium alloy was produced giving a 12-ton tensile strength with 5 per cent. elongation. The holding down yokes on the cylinders were made from vanadium steel, and, of course, the crank-shaft and cam-shaft were also made from suitable steels. It is reported also that the cylinder castings were remarkably clean and close of grain. The job reflects great credit on the Tarrant Co.

The trial was superintended by Mr. O. C. Malmgren, works manager to the constructor, and Colonel Irving, chief of the General Staff, some aides-de-camp, and Captain Harrison, O.C., Werribee, were present.

The engine has now been taken to Werribee, where it will undergo further trials before being put into a machine.

It is interesting to note that the company which built this engine also built the first motor-car engine made in Australia and the first petrol marine engine.

FROM DENMARK.

"Flugsport" Nr. 20 of 6th October contains the following casualty list of the flight troops:—Feldflieger-Department: Oberlieut. Rosenbaum, hitherto reported severe wounded, died; Oberlieut. and Observator Stieve, missing; Lieut. Wodtke, died from illness; Lieut. Teichmann, missing; Lieut. Bailer, missing; Lieut. Willenbucher, wounded in an accident; Lieut. Kalweit, killed; Lieut. and Aviator Gillhousen, missing; Lieut. of the Reserve Eichler, severe wounded; Lieut. of the Reserve Baron von Nordeck zur Rabenau, died from illness; Lieut. of the Reserve Härter, severe wounded; Officer Replacer Tornack, killed in accident; Vizefeldwebel Rogatzki, died from illness; Vizefeldwebel Struve, died from illness; Sub-Officer Wolf, killed accidentally; Sub-Officer Jaretzky, severe wounded; Sub-Officer Kallir, slightly wounded; Sub-Officer Seegers, accidentally killed; Gefreiter Euer, slightly wounded; Gefreiter Hellerscheid, accidentally killed; Helmut Nandz-sus, died from his wounds; Karl Lindemann, accidentally wounded; Otto Rummel, died from illness; Otto Elze, accidentally killed; Karl Cromer, died from illness; Bruno

Kuhnert, accidentally wounded; Karl Krüger, accidentally wounded; Gefreiter Böhhling, killed in accident; Wilhelm Fasse, accidentally killed; Georg Milchner, slightly wounded in accident; Army Pilot Josef Suvelack, killed.

Bavarian Feldflieger-Department I.—Lieut. Niedermayer, killed in accident; Vizefeldwebel Spannacke, died.

Bavarian Feldflieger-Department II.—Lieut. of the Reserve Kehre, severe wounded by accident; Sub-Officer Beer, severe wounded by accident.

* * *

And the continuation of the casualty list in "Flugsport" of 20th October reads:—Feldflieger-Department: Captain Göbel, prisoner of war; Oberlieut. Fritsch, slightly wounded; Oberlieut. Döring, slightly wounded; Lieut. of the Reserve Francke, slightly wounded; Lieut. Oelze, accidentally killed; Lieut. Kühnemann, died from illness; Lieut. von Winterfeld, died from his wounds; Lieut. Völkers, killed; Lieut. Schilling, severe wounded; Lieut. Teichmann, hitherto reported missing, killed; Lieut. Putz, accidentally wounded; Lieut. of the Reserve Stauss, killed in accident; Lieut. of the Reserve Hey, killed in accident; Lieut. of the Reserve Schreiter, missing; Lieut. of the Reserve Sauer, slightly wounded by accident; Lieut. of the Line Naumann, severe wounded; Officer-Replacer Priebe, missing; Officer Replacer Neuss, accidentally killed; Officer Replacer Horn, accidentally wounded; Vizefeldwebel Gerstner, missing; Sub-Officer Bruno Langer, missing; Sub-Officer Czaplewski, slightly wounded; Sub-Officer Ottfried Müller, accidentally killed; Sub-Officer Schanz, killed in accident; Gefreiter Lutterbach, hitherto wounded, has returned to the troops; Gefreiter Stener, slightly wounded by accident; Gefreiter Rimmelspacher, slightly wounded; Gefreiter Köhler, missing; Gefreiter Bartz, accidentally killed; Hermann Blesche, accidentally wounded; August Winterhalter, slightly wounded; Arthur Chasanowicz, killed in accident; Robert Michel, severe wounded; Martin Wunsch, severe wounded; Willi Kirste, killed; Pius Lang, slightly wounded; Willi Hauf, hitherto reported severe wounded, died; Karl Rübenacker, hitherto reported severe wounded, died; Jacob Dörzenbach, slightly wounded by accident; Johann Schmidtil, slightly wounded; Franz Huschbeck, died from illness.



A RECORD WEEK:—The eight pupils of the Beatty School who took their certificates in a week. Left to Right—Sig. Gino Virgilio, the Instructor; Mr. A. F. Lashmar, Mr. H. Fawcett, Mr. G. A. Brown, Capt. G. A. Cadogan-Cowper, Mr. H. T. Mellings, Mr. J. V. Nash (all photographs by Birkett). Mr. C. S. Duffus, and Mr. P. C. Campbell. (Photographs by Swaine.)

A "BLUE BIRD" MEMORY.

Old timers at Brooklands will be sorry to hear that Mr. Eardley Billing died on November 19th. He was one of the first people in this country to take up aviation, and soon proved himself to be one of the ablest mechanics and most ingenious contrivers of detail work who ever built an aeroplane. Among his little ideas was the aviator's teaching machine, on which a pupil could learn to control an aeroplane without ever going into the air. It has always been a marvel to me why the machine has not been developed for use in Service schools on windy days.

As Brooklands developed, Mr. and Mrs. Billing opened the famous "Blue Bird" Restaurant, of which hundreds of thousands of visitors to Brooklands must have pleasant memories, and to many of the older fliers it was a true home from home. Mr. Billing was at that time associated also with Mr. N. S. Percival, now an officer of the R.F.C., in the quaint and vocal "Oozely Bird" biplane. In 1914 Mr. Billing suffered from cerebral trouble, and never returned to Brooklands afterwards, but Mrs. Billing carried on the "Blue Bird" till it was taken over by the Army.

Mrs. Billing is now staying at 190, Croxted Road, West Dulwich, and as she is left without means she is anxious to find work. If any manufacturer wants anyone to run a big works canteen efficiently, or to undertake any position of trust, Mrs. Billing's unusual capability fits her for such a position. Incidentally, certain aviators, some of them officers in the Flying Services, who still owe her money on account of "Blue Bird" debts might avail themselves of this occasion to settle their liability.—C. G. G.

HARD LUCK.

Everyone will sympathise with the sportsman who financed the experimental biplane known as the Mann in the unfortunate accident which wrecked the machine on November 17th. This gentleman was persuaded some time before the war to pay for the building of a machine which was to be a "pusher" with the engine in front of the passenger and two chain-driven propellers, one on each side of the pilot. The type was strongly advocated in this paper—as an experiment—some five years ago, before engines exceeded 50 h.p. and before speeds grew so great that head-resistance became a serious problem. The Mann biplane was built last year at Kingston, under the supervision of Mr. Leeper, now of Fredk. Sage, Ltd., and was an excellently constructed piece of work. It appeared later at Hendon and flew respectably. During the past summer it was fitted with a bigger Anzani engine, and its performance improved accordingly, its climb with pilot and passenger being about 500 feet per minute, and its speed about 80 miles an hour.

Obviously this performance, though good, was not good enough to justify this paper in booming the machine as being of military importance, as some papers did. The principle of THE AEROPLANE is to look after Service interests first, and in this instance it did not appear reasonable to advocate the introduction of an entirely new type of machine unless its performance was notably better than that of existing machines. Moreover, the writer has always been suspicious of the chain drive, not for fear of the chains breaking under any proper load, but for fear of some careless mechanic leaving the chains slack, so that they might jump the cogs, or tightening them up so much as to pull the chain wheels out of line. Also, the principle of holding the propeller-shafts on wires seemed questionable, and, anyhow, the chain cases and stays appeared to set up undue head resistance and lead to inefficiency.

The refusal of this paper to boom the machine produced some extraordinary letters from one of the persons

interested in it, but it must be said that the actual owner saw the matter quite in the proper light. In fact, he was so pleasant about it that one refrained from prophesying evil publicly, and merely left the machine alone. One is only sorry that the kind of accident which was suggested to him as a possibility appears to have occurred.

It seems that Mr. Barrs was flying the machine on November 17th, at Hendon, when one of the chains carried away, or mounted its cogs and pulled itself off. Anyhow, complications ensued in the transmission system, and the machine was apparently unable to fly with one propeller—which is just where twin-propeller machines with independent engines score. Whether or not the machine was under full control during its glide to earth is not quite clear, but in any case it came down outside the aerodrome and was fairly extensively damaged.

One ventures to suggest to the proprietor of the machine that, if building another, he should have two independent engines, or else a direct drive. There are possibilities in very big machines of centrally placed engines driving two propellers together through some form of bevel or worm gearing and flexible shafts, provided a gear can be produced which permits either or both of the engines to drive either or both of the propellers. Otherwise independent engines appear to be the only satisfactory solution of the twin-propeller problem.

One of those connected with the machine claims that the chain broke owing to a gear-box bearing seizing up. This seems improbable, because, if a bearing were beginning to run hot, it would almost certainly reduce the revolutions per minute of the engine quite appreciably before it seized solid, and, if it did not do so, one would expect the driving shaft to twist off when the bearing seized with such a jerk as to snap a chain. This same person further claims that the strength of the driving shaft saved the lives of the pilot and passenger by acting as a stay to the fuselage when the machine struck the ground, and he states that any "pusher" nacelle would have crumpled up. It so happens that on several occasions Vickers gun-carriers have hit the ground nose first without crumpling, on one occasion a machine flying straight into a hillside in a fog, so the statement lacks demonstrable veracity.

Finally, this person claims that the smash outside the aerodrome was caused by a down-current, which brought the machine down unexpectedly, and that the wings were either undamaged by the breakage in the air or so little damaged as to give perfect control of the machine. If that claim be true, the smash can only have been caused by an error of judgment on the part of the pilot, for he should have come over the aerodrome as high as possible, and have kept over it till he landed, and not have been outside it at so low a level as to be "planted" by a down-drop.

If the persons originally responsible for the machine had made a practice from the beginning of claiming less and doing more, it is possible that the proprietor and financier might have been better rewarded.

In several papers describing the accident the extraordinary statement appears that "the machine had made 27 flights, totalling 210 hours in the air." That would mean an average of over 8 hours per flight, and one is not aware that the machine ever remained in the air for as much as two hours at a time. The figures may be journalistic errors for 270 flights or for 21 hours in the air, or, of course, both may be wrong.

A later account of the accident says that the chain and gear, in collapsing, carried away part of the wing, which naturally made the pilot's descent more difficult.

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ESSENCE OF HENDON.

(Not really extracted from the diary of Toby, M.P.)
Hendon, Saturday, November 20th.—Strangers' gallery not by any means fully occupied. This no doubt due to very low temperature, particularly uncomfortable to hon. members arriving by cars not of limousine type. Motor transport wagon firmly embedded in what might be called trenchant mud in front of main entrance to the House. Secretary of State WALTON looks on with thoughtful air while debate between motor attendants proceeds.

Several spruce-looking Government machines giving picturesque demonstrations on behalf of Admiralty at great height. Crimson light of early setting sun reflected on highly polished planes provides brilliant effect, obviously discernible at considerable distance by enemy anti-aircraft guns. Question will probably be asked in House about this at first opportunity. Dull surfaces surely preferable, though less picturesque.

Sundry machines belonging to Opposition busily engaged. Discussion between MANTON, WINTER, and hon. member for Russia as to who can take up most constituents at two guineas per head. Department concerned smiles approval.

SPEAKER announces several Caudrons taking part in proceedings, including that of MOORE, who has not been seen so frequently as of yore during winter session, but whose hand has not lost its cunning.

House adjourns at five for tea.

Business done.—Large sum for passenger flights and much mud collected.

Sunday.—Debate continued after luncheon interval before larger attendance. MOORE first to rise, followed by RUSSELL, PASHLEY, and under-secretary for L. & P. SCHOOL. MANTON, KENWORTHY, and VIRGILIO flying with vigour in the hope of getting warm if possible. Many passengers, all suffering from genuine cold feet. Hands and faces ditto.

Tea on terrace abandoned for season. All pylons, except our old friend Number One, now transplanted to avoid being killed by frost. Large sections of fencing partly removed to facilitate entrance of the World's Largest Aeroplane, expected shortly. Foreign Minister consequently interrogated as to rumoured peace overtures by Germany. LORD HANDLEY and PAGE denies any knowledge of alleged monster, but PLANT gives notice of further question on subject, being concerned for capacity of his gates.

Government machine provides sensation of day. Returning from flight, attempts to enter aerodrome through back of machine shop. In so doing removes considerable portion of building and some electric light wires, eventually coming to rest on roof of smaller building in front.

House heard with mixed feelings pilot uninjured, but passenger somewhat the worse for occurrence.

Business done.—More heavy passenger duties accumulated by CHANCELLOR of EXCHEQUER and further instalment of Land Tax taken up.—D. W. T.

READING MATTER WANTED.

Mr. A. F. de Moleyns will be glad to receive discarded magazines, books, etc., to send to the ratings at a R.N. Airship Section on active service. Parcels should be sent to him at Foundry Cottage, Haslemere, Surrey.

SCHOOL AND WEATHER REPORTS.

	Mon	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast ...	Fine	Fine	Fine	Fine	Fine	Fine Windy	Dull
East Coast ...	Fine	Snow	Fine	Fog	Fine	Fine	Fine
London District	Fine	Fine	Fine	Fine	Fine	Fine	Fine
	Misty	Misty	Misty	Misty	Misty	Misty	Misty
Lake District ...	Snow	Fine Windy	Fine	Fine	Bumpy	Bumpy	Calm

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Armitage, Burden, Horniman, Malet, Ovens, Saint, and Aird.
 Circuits with Inst.: Prob. Flight Sub-Lieut. Moody.
 Pupils doing figures of eight or circuits alone: Prob. Flight Sub-Lieuts. Aplin and Davenport.
 Certificates were taken during the week by Prob. Flight Sub-Lieuts. Cross and Graham.

Machines in use: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Pupils with Instructor on machine: Messrs. Dobson, Fraser, Pauli, Hamtiaux, Cox, Yiule, Laidlaw, Tomson, Vernon, Cuthbertson, and Wood.

Doing straights or rolling alone: Messrs. De Grauw, Launoit, Coppens, Griffiths, Harkness, Liddell, Sherwood, and Sherwood.
 Mr. Liddell has been flying exceptionally well, and by the time these notes appear should have completed his certificate tests.

Machines in use: 60-h.p. and 50-h.p. Caudron type biplanes.

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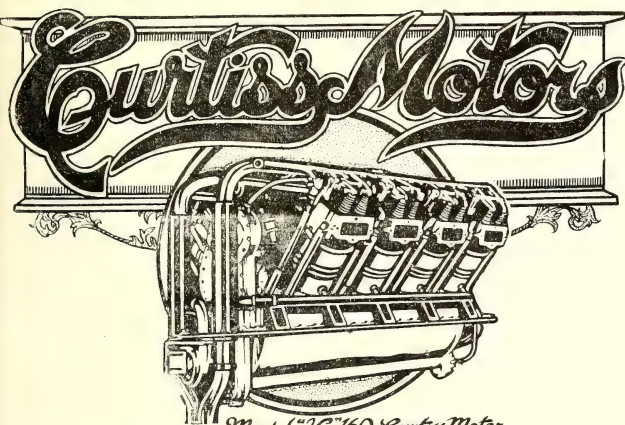
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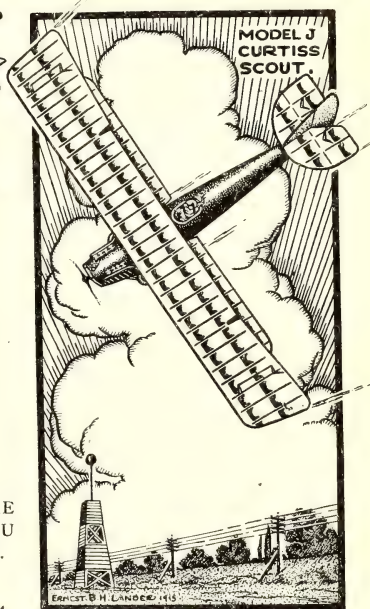
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AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor on machine: Messrs. Franck, Henshaw,

Howe, Leigh, Gammon, Philippi, and Yates.

Circuits alone: Mr. Horridge.

Circuits with Inst.: Mr. Hughes.

Certificate was taken during the week by Mr. Fraser.

Machines in use: Grahame-White biplanes.

AT THE HALL SCHOOL.

The following pupils received instruction. With Mr. H. F. Stevens: Messrs. Broad, Drew: circuits, glides, landings and eights alone.

With Mr. Cecil M. Hill: Messrs. Manley, Wilkins, Cook, Evans, Rattray, Dresser, Shum, Butterworth, Nicolle, Dodd, Stirling, Sepulchre, Lieut. Bell.

With Mr. Charles-Bell: Messrs. Bond, Cumberbirch, Arnshy, Woolley, Mann, Capt. Grey, Redford, Ormerod, Smith, Milburn, Cosgrave, Chapman, Thom, Bennett, Niel, Robert, Baron Ackroyd, Le Coq Moir.

Machines in use: Hall tractor (Government type) biplanes.

The Hall Flying School begs to announce that there are positively no more vacancies for the present month, and advise prospective pupils to book early for possible December and January vacancies. New machines are now being put through as quickly as possible to accommodate new pupils who are anxious to join the Hall School.

Owing to the bad weather recently flying practice has been somewhat curtailed at all aerodromes, therefore the training period is lengthened in some cases beyond the average.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, Sykes, C. M. Jacques, and W. T. Warren, jun.

Pupils: Messrs. Martin, Lees, Roberts, Loomes, and Dawson, rolling. Messrs. Hunt, Heyn, Jowett, Knowles, and Lambert, straights.

Pupils doing figures of eight or circuits alone: Messrs. Lewis and Burgess.

Certificates were taken during the week by Messrs. Leslie Porter, Clifton Franklin, and W. T. Warren, jun.

Machines in use: Four L. and P. tractor biplanes.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils with Instructor: Messrs. Baldwin, Baker, Barrow, Begg, Bond, Bowick, Brynildsen, Byrne, Collett, Collier, Edwards, Fellows, Fox, Fry, Gayner, Hodgson, Kirkwood, Murdoch, Nicholson, Onley, Overton, Podmore, Richard, Samter, Schollaert, Smith, Willmetts, Barnes, Godfrey, Scott, Williams, Summers, Paterson, Drysdale.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Saturday and Sunday by Messrs. Kenworthy and Virgilio.

WINDERMERE.

AT THE N.A.C. SEAPLANE SCHOOL.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with Instructor on machine: Messrs. Hallet (35), Harvey (20), Holden (18), H. Ingham (26), P. H. Ingham (14), Lawton (39), Jeffries (9), Lindner (19), Ruthven (23), Satton (27), Lieut. Stubbs (36).

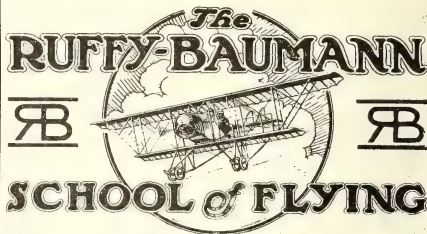
With Instructor as Passenger: Messrs. Barber (16), Benson (15), Coats (23), Lowton (10), Macintyre (12), Robinson (27), Ridgway (61).

Figures of eight and circuit alone: Messrs. Reid (29), Coats (31).

Messrs. Reid and Coats both passed Certificate Test "A" successfully.

Machines in use: N.A.C. 80 Gnome biplane; Blackburn 100 Anzani monoplane.

A lot of good work was got in despite early morning mists and some snow. Mr. Jack Coats went for his ticket after only 90 minutes' tuition and proved himself a capable flier. Mist and falling light made it impossible for him to complete it, but he will do so at the first opportunity. The performance is all the more creditable, inasmuch as an 80 seaplane takes some handling, as several land pilots have found out.



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A NEWCOMER.

Aeroplane constructors will be interested to learn that among other firms who have come into the trade recently are Henry Simonis and Co., of Park Royal, Willesden, the makers of fire-extinguishing apparatus of all kinds.

Messrs. Simonis and Co., who are regular Admiralty and War Office contractors, are now prepared to undertake contracts for the building of aeroplane parts and complete units, such as tail planes, control surfaces and wings.

The nature of their previous experience guarantees high class wood and metal work of a very accurate description. The firm has just completed a contract for tail planes for a well-known aeroplane designer, and further enquiries will receive immediate attention.

As has been mentioned before, in peace time the business of Messrs. Henry Simonis and Co. was the making of fire engines, fire escapes and all other fire engineering work. Immediately on the outbreak of war, the exceptional facilities they possess for high-class wood and metal work were largely utilised in connection with ambulance work. Later special work was undertaken in connection with Admiralty airships, and the similarity of this work with aeroplane construction led the enterprising proprietors to decide on the larger utilisation of their plant in this direction during the national crisis.

Inspections by both Government Departments confirm the suitability of their factory for practically all kinds of aircraft work except engines. An improved welding plant is available, an annealing stove for sockets and clips, a full complement of lathes and boring machines, milling, slotting and shaping machines, punches (hand and power), fully equipped smithy, and a complete wood-working plant.

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Officers and others who desire to purchase cars from a reliable firm cannot do better than go to Mann and Egerton, Ltd., of Norwich and London. The works of this firm are staffed by car experts in every department and every

operation is performed in the best possible style. The engineering works are equipped with the latest machinery and a speciality is made of repairs and overhauls.

All second-hand cars are overhauled by the firm before being offered for sale, so that buyers can rely on obtaining their purchases in first-class condition.

The catalogue prices include free delivery, one week's free tuition, and free tuition for coachman, if required.

The firm's London address is 379-381, Euston Road, N.

A POCKET WARMING-PAN.

The Aircraft Accessories Company, of Sackville House, 7, Red Lion Square, Holborn, London, W.C., are marketing an ingenious article known as the "Aracc" Pocket Warmer, at an extremely moderate price. This consists of a nickel-plated case of metal in which a special fuel is burnt, which, although it gives out considerable heat, produces no smell and glows for four or five hours on end. It seems quite likely that this invention should prove of considerable utility in the Flying Services, especially among the section of the Service whose privilege it is to stand on the ground and wait for the aeroplanes to come back. A pair of these warmers carried in the side pockets of a tunic would probably be quite effective for their purpose, and aviators or observers might find them beneficial for intermittent use.

THE DOPE QUESTION.

Apropos dope, one gathers that it would be interesting to many people if they knew for certain whether the R.A.F.'s latest dope is guaranteed non-poisonous. One hears curious stories from the R.A.F. of dope of the old kind being put into new cans with different labels on them, and of the frequent administration of medicine to workers in dope shops as an antidote to dope poisoning. And it appears that the specification of the latest dope includes poisonous ingredients. If these stories are untrue, they should certainly be denied officially by the authorities, who will doubtless thank this paper for drawing their attention to the existence of tales which cause uneasiness among the workers.

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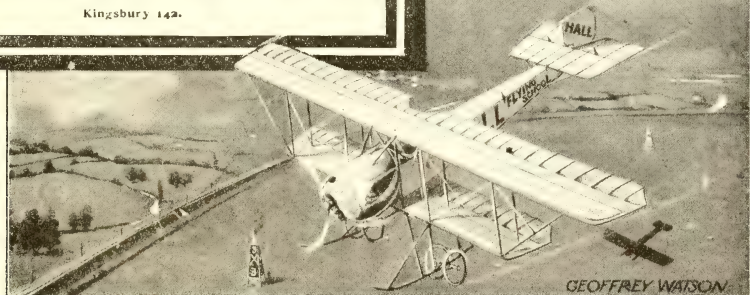
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SOME WOOD-WORKING MACHINES.

The acceleration of aircraft production has been dealt with so often and from so many points of view in the columns of *THE AEROPLANE* that its importance needs no further emphasis. Apart, however, from the lack of energy displayed by some British so-called workmen, or the absence of proper organisation in some quarters by those in control, there are many directions in which the need for considerable acceleration will be apparent to those who study the aircraft industry.

The difficulties of the labour supply are at present innumerable, and always on the increase, as every employer knows to his cost. Anyone, therefore, who helps to solve these difficulties deserves the thanks of the community, and should reap some reward, not only in the next world, but in this.

In the wood-working department of the manufacture of aeroplanes there is a good deal of manual labour involved, and the disposition generally has been to look on this as unavoidable. Fortunately, there is one well-known engineering firm which thinks differently.

Messrs. Wadkin and Co., of Leicester, are admittedly specialists in wood-working machinery. The excellent reputation they enjoy, which extends over at least half a century, is due largely to their new mechanical wood-worker, a remarkable machine now in use in practically every country throughout the world. This machine, of which they are the manufacturers and original patentees, must be one of the most ingenious and versatile machines in existence. It would be difficult to name any single mechanical operation possible in woodwork which could not be done, and done well, by the Wadkin Mechanical Woodworker, and one does not need to be an engineer, or to have any technical knowledge, to appreciate the immense amount of brains, time and energy which must have been necessary to evolve so complicated and yet so simple and efficient a piece of mechanism.

With such a monument to their credit one would naturally expect further useful inventions from a firm with so wide an experience of the needs of workers in wood, and the expectation has been fulfilled.

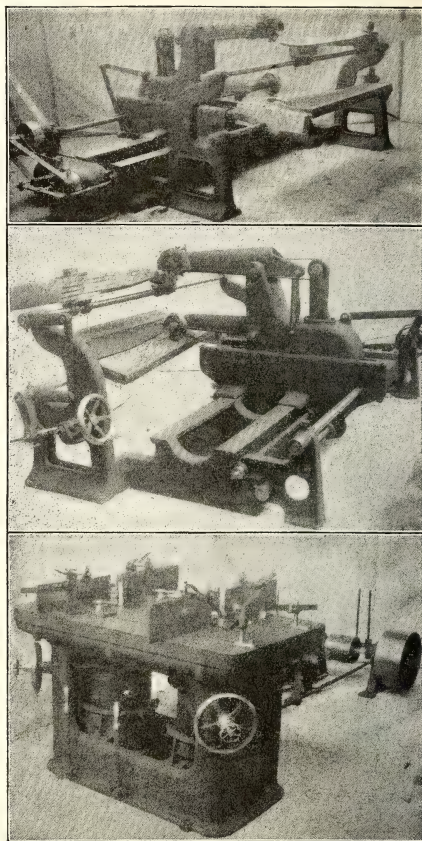
Aeroplane constructors have hitherto appeared content to have their struts produced by hand—a slow and consequently expensive method. Messrs. Wadkin and Co. recently designed a combined copying and finishing lathe for the reproduction of aeroplane struts and fairings. A detailed description, with photographs, appeared in *THE AEROPLANE* on July 14th last, and since that date a number of these lathes have been manufactured and sold, to the complete satisfaction of all concerned.

A closer acquaintance with this lathe only serves to increase one's admiration for it. As an example of its capabilities, the writer recently saw a piece of silver spruce converted into an accurately made and well-finished six-foot B.E. strut in the space of 19½ minutes. Manufacturers will readily appreciate the value of such a lathe. When once the piece of rough timber was adjusted—a simple matter—it required no further attention until the strut was finished. Two or three minutes with a piece of sandpaper, a coat or two of varnish, and the strut was ready to take its proper place and start on active service.

The copying operation is so rapid and yet so accurate that it would probably arouse the professional envy of Messrs. Roneo themselves. One is not surprised to hear that a brisk demand has arisen.

Messrs. Wadkin and Co. next turned their attention towards propellers. The result is the Wadkin Patent Propeller Shaping Machine. The name indicates sufficiently the use of the invention, and the accompanying illustration will give some idea of its method.

It is designed for shaping with speed and accuracy propellers of any shape, with any number of blades, and any size up to 12 ft. diameter. It will produce an exact facsimile of the "original" placed into the machine. This



Two views of the propeller-shaping machine and a vertical double-spindle moulding machine.

"original" consists of one blade only, together with the hub, which is mounted on a mandrel in a horizontal plane opposite to a carriage which is longitudinally slidable on a bedplate. This carriage is adapted to support two pivoted arms, the lower one of which carries the original roller, and the top one the cutter-block, mounted on a reciprocating headstock. At their opposite ends the two pivoted arms are connected together by a link, which is adjustable to enable the size of reproduction to be varied if desired. The headstock supporting these two arms is reciprocated transversely of the bed by means of a crank motion, so that the cutters will traverse across the work. As each end of the stroke is reached the carriage is moved longitudinally ¼ inch, so that cutting takes place both on the forward and the backward stroke across the work, thus saving considerable time.

The cutter-block is fitted with 12 cutters, six on the front and six on the back. The spindle is mounted on ball-bearings running in dust-proof housings, and the end thrust is taken by a special double ball thrust washer. The drive is by means of a flat endless belt running over a 2-step pulley, which is also mounted on ball-bearings, and carried by a bracket fixed to the sliding headstock. A second flat endless belt now runs vertically downwards over guide pulleys, onto the driving pulley, which is

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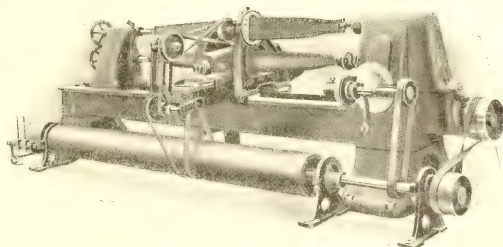
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fixed, and traverses with the carriage along a splined shaft. This shaft carries at one end a pair of fast and loose driving pulleys. The loose pulley runs on a phosphor bronze bush and is fitted with a Stauffer lubricator. This shaft also carries a pulley driving by open and crossed belts pulleys mounted upon a shaft, and thence by reduction gearing, to operate the forward displacement of the carriage.

When this has reached the end of the blade the propeller is turned round upon its mandrel to bring the next blade into position, and cutting now takes place on the reverse traverse.

The support for the "original" and the work as previously mentioned consists of mounting them on a mandrel. The mandrels are each mounted on a pivoted flange plate having arms linked together, and provision is made for adjusting the inclination of the mandrels relatively to the headstock whilst the machine is running, to enable the work to be so regulated as to provide the minimum vertical displacement of the cutter arm during its traverse across the blade. The mandrels are, of course, locked securely in any position of adjustment.

As previously stated, the "original" consists of one blade on the hub portion, and is made preferably of cast-iron, and corresponds identically in shape to the blade to be formed, enabling existing gauges and templates to be used to ensure the accuracy of the "original." It is, of course, essential that the shape of the blade should be accurately kept along its longitudinal edges. Means must therefore be provided to prevent the "original" roller falling abruptly. A few holes should accordingly be drilled and tapped along the edges of the "original" to secure a wooden guide, which should be shaped to enable the roller to run down a slight incline. When one face of the blade has been cut it is only necessary to reverse the work and also the original in its support.

A feature of the machine which is particularly important is that an old or broken propeller may be used as the "original" and an exact duplicate made.

Means are provided for securely holding both the original and the work whilst it is being cut, and for accurately setting the work. There are ample means for lubrication, and the best materials and workmanship are used throughout.

Two blades are cut in 2½ hours, instead of 18-20 hours, which would approximately be the time required to do the work by hand. [Or 40 to 45 hours on which Trade Unions insist.—Ed.]

As in the case of the copying lathe, it does its work automatically, so that the saving in labour and time is of the greatest importance. Anyone at all interested may be recommended to go and see one of these machines in use. Many of the leading constructors have already done so, with the result that a number are now in use, while others have been ordered.

It is interesting to learn that the machine was designed and completed in less than nine weeks—a very creditable performance indeed, considering the intricate movements to be carried out.

There are several other machines for woodwork made by Messrs. Wadkin. One is a vertical boring machine, which, though a standard article, is specially suitable for aircraft work and is being sold for this purpose. A 30-inch band-sawing machine is also very popular with the trade. A high-speed fret-sawing machine, with a cutting table; a 16-inch universal double dimension saw; circular saw benches; and a combined surface planing and thicknessing machine, will also appeal to those who are endeavouring to turn out good work with the least amount of labour and the greatest speed.

The firm are laying themselves out to specialise in all sorts of cutters for any section. They turn them out dead to size, and no finishing is required. A large trade is being done in them, and prompt deliveries are guaranteed.

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A visit to the works at Leicester is highly instructive. The premises are rapidly becoming inadequate for the orders which keep coming in, and a new site has been secured, though the difficulty of moving a busy factory in the midst of war pressure is obvious.

There is no one of the name of Wadkin now connected with the firm. In the absence on active service of Mr. J. H. Goddard, who holds a commission in the Royal Engineers, the management of the commercial side of the business is in the capable hands of Mr. H. G. Jackson. Mr. A. Priestnall is the chief designer, and judging by results he is an asset of undoubted value to the company. Mr. A. Sheriston, the works manager, has had a long experience in woodworking machinery, and altogether the factory is thoroughly well organised, and conducted with no small amount of enthusiasm and energy.

The staff have the satisfaction of knowing that they are helping in a very direct way to equip the Allied forces with aircraft. As they are also setting free numbers of useful men for the Services, or for other work which has to be performed by hand, their labour-saving inventions are of great value at a time like the present, and Messrs. Wadkin & Co. are to be congratulated on their happy position.—D. W. T.

THE WHITEHEAD AIRCRAFT CO.'S PROGRESS.

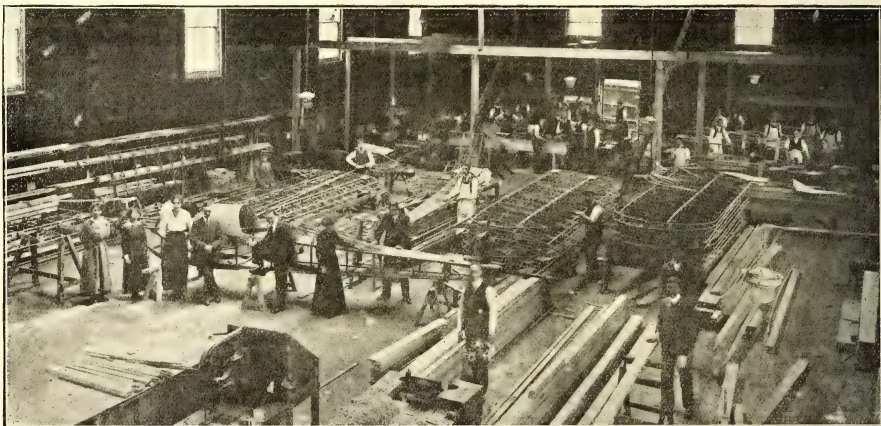
There was a notable gathering on November 12th at the Castle Hotel, Richmond, when the employees of the Whitehead Aircraft Co. entertained to dinner their managing director, Mr. John A. Whitehead. The works manager, Mr. J. Ward, was in the chair, and among others present were Mr. J. A. Whitehead, the ex-Mayor of Richmond (Councillor T. Terry), Mr. A. H. Etherington (London and South-Western Bank), Lieutenant-Colonel Mackay (of the Public Schools Battalion, Middlesex Regiment), Mr. H. T. Wood-Smith (A.I.D. inspector), Messrs.

E. J. Gordon, F. T. Coupland, Hobbs, and McPhail. The gathering was a striking testimony to the loyalty and enthusiasm of the employees and a tribute to the personality of their chief.

Since that date the writer has had an opportunity of seeing the Whitehead works on an ordinary working-day, and it must be confessed that if one did not know how recently the firm began its work one would never suspect that the amount done could have been got through in the time. When one recalls how big engineering firms with splendidly equipped shops and with hundreds of thousands of pounds of capital have taken six months and more to get their first aeroplane out, it is more than creditable to Mr. Whitehead that he has got his first machine finished in four months from the time when the firm's name was painted on the door of an absolutely empty workshop.

Energy alone cannot produce such results, for organising power and mechanical knowledge of a high order are necessary as well, and these qualities Mr. Whitehead obviously possesses to a noteworthy degree. Not only has he organised his works so that they run with remarkable efficiency, but he has evidently the natural gift of selecting his men, for in some twenty-five years' experience of workshops I cannot recollect seeing a more intelligent-looking lot of hands nor a crew who seemed keener on their work. Mr. Whitehead showed me something of his methods of handling men, and if any walking delegate of a Union feels inclined to meddle with the Whitehead employees I trust he will give me due notice so that I may go down and watch his reception.

The work turned out is distinctly of high quality, and one hopes that Mr. Whitehead may be able to increase his premises, his staff, and his output, so as to enable him to carry out the extensive programme which he has in view.—C. G. G.



The beginning of the Whitehead Aircraft Works. Since then a gallery has been put round the works, and much machinery has been installed.

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LEGACIES.

The list of wills and bequests published in the "Morning Post" of November 12th contains the following note:—

Lieutenant Thomas Lindsay Bainbridge, Northumberland Fusiliers, of Holmwood, Clayton Road, Newcastle, and Eshott Hall, Felton, Northumberland, an electrical engineer with Swan, Hunter, and Wigham Richardson, Wallsend, was killed on April 27th, aged thirty-three years, leaving £32,443. He gave his aeroplane and shares in the Northern Aircraft Company to W. Rowland Ding.

A notice in the Press states that Sub-Lieutenant Earl Annesley, R.N.V.R., who was shot while flying over Ostend on November 5th, 1914, aged 30, left unsettled estate of the gross value of £42,751.

Testator gave £5,000, his motor-cars and pianos, certain personal furniture, and The Hut, Newcastle, and the contents, to his wife; £2,000 to Priscilla Cecilia, Countess Annesley; £1,000 to his sister, Lady Mabel Sowerby; and the remainder of the furniture at the Castle to the person who shall succeed to the resettled family property, and the residue of the property to his children, and on failure of issue to his three sisters.

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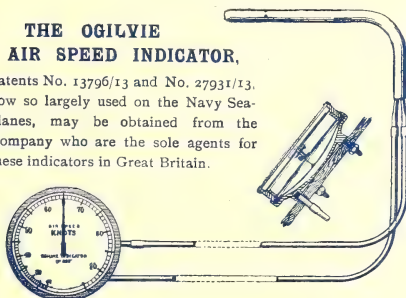
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WEDNESDAY, DECEMBER 1, 1915

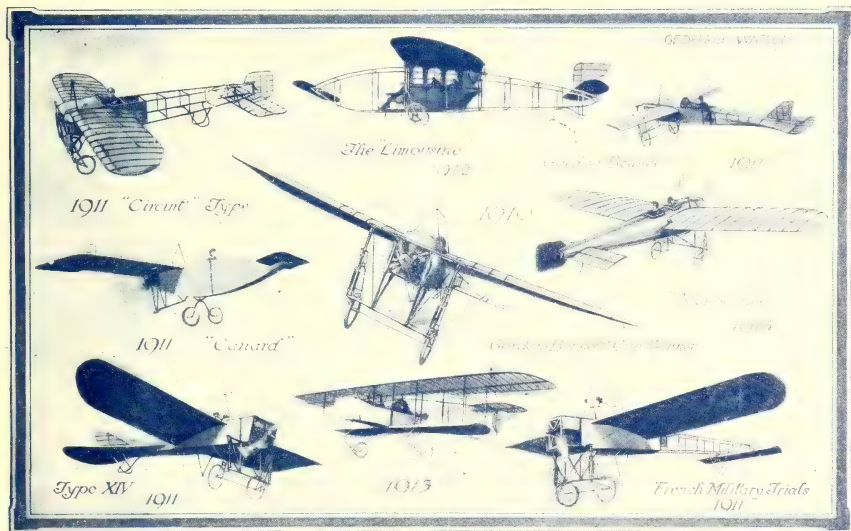
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Vol. IX. No. 22

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ON THE PSYCHOLOGY OF FLYING.

The other day a friend of mine had the plumbers in—or, rather, I should say, had the plumbers outside, for they were operating on sundry unbeautiful but necessary pipes on the outside of the house, and their advanced base, so to speak, was the roof of the lower part of the building at the back. Their strategic position, as it were, just outside the windows, made it impossible to get out of earshot of their conversation in its unexpurgated condition, which was largely concerned with aeronautical matters, the occasion being shortly after the last raid on London.

They were typical plumbers. They arrived without the necessary munitions, in the true English style, and one of them remained to hold the front line of operations, while his mate, who appeared to be suffering from what a young Gunner friend of mine calls "ingrowing boots," and moved correspondingly slowly, turned himself into a kind of Mechanical Transport Section, and made prolonged and toilsome journeys between the advanced base and the Munitions Department at home in search of matériel, which, as in the case of the Expeditionary Force, seemed to be produced with considerable unnecessary delay.

The necessary munitions having been collected and the position having been consolidated, after much talking for very small results, the enemy pipe was reduced for the time being to a state of inactivity, and the two treated themselves to a spell of rest and conversation. The trend of the discussion was that "Zeepelins"—as they called them—hadn't ought to be allowed, and that them flying coves wasn't adoin' of the jobs they was paid to do. According to him of the boots the Government wasn't adoin' of its job neither—with which sentiment, doubtless, many people will agree—because if it was them flying coves—aforsaid—would have been over in Germany every couple of days adroppin' bombs and killing hundreds of Germans for every bloke what was killed in England.—Which shows one the evil effect on the ignorant of ill-considered agitation for impossible reprisals.

Apparently, the master plumber suggested that there might be some difficulties in the way which prevented such reprisals, but he of the boots was of adamantine conviction on the subject. "I tell yer," said he, "it's easy enough ter git ter Germany. Y've on'y gotter build airypplanes bigger nor them Zeepelins. Besides, we've got Zeepelins of our own. I know we 'ave, 'cos I've gotter cousin of my missus' wots aworkin' at the shop w're they're amakin' of 'em. On'y they don't call 'em Zeepelins, 'cos Zeepelin is a patent wot, so they can't. Wot's the matter reely is them flyin' chaps. 'Alf of 'em's on'y nippers, and they're too soft-hearted for the job. They're afraid of droppin' bombs. Just you give me 'alf a chance, and I'll show 'em."

Hereabouts, it seems that operations began again, for the belligerents borrowed a dust-sheet with which to protect a skylight, over which they were working, from falling débris. Their method of protecting the skylight was to spread the sheet flat on top of it, instead of fix-

ing the safety device above like a bomb-net. The result of the protection was that a few minutes afterwards there was a rending crash, and a hefty great pipe-wrench came through the skylight, accompanied by fragments of sheet and a remark from the master-plumber to the general effect that that had hyperamically torn it, just as he supersanguinely expected.

After that the master, coming down a ladder, stepped on the mate's fingers which were steadying it and stood on them for some minutes while he argued as to whether he was wrong for not looking where he was going or whether the mate was' wrong for holding the rungs instead of the sides. Meantime, a chunk of piping detached itself and carried away some more of the wrecked skylight. The whole operation was somehow dimly reminiscent of the effects of an argument between the O.C. in the fighting-line and the Staff, regardless of what happens while the argument is proceeding.

However, these little differences being adjusted, further amicable conversation took place on the subject of air raids, the mate arguing that there wasn't nothing to it so far as flying to Germany was concerned, that wasn't no more difficult nor driving a taxi, but where them soft-hearted young gents couldn't get along with it was when it come to dropping the bombs. What the Government should do was to send proper hardened men like him, for though he thought it would be a terrible moment and his hand might tremble a bit like as he held the bomb, yet he could harden his heart and pull himself together and throw it overboard, and throw it straight, mark you, at the right moment.

At this point the little lady of the house, who happens to know rather more about flying and about real war than quite a large number of officers of the Flying Services, was so overcome by emotion at the idea of the plumber's mate turning aviator and raiding Germany that she fled from the scene, and when she had finished laughing the operations had finished for the day and all was quiet at the front—or, rather, the back.

HOLDING THE MIRROR UP TO NATURE.

It is frequently good for us to see ourselves as others see us, so officers and men of the Flying Services may be interested to know that in the estimation of some working men we do not use Zeppelins because the name has been patented, although we have got something very like them, and that we do not drop bombs on Germany because our aviators are too tender-hearted to do so.

Now, when one comes to treat that little incident as a serious study in psychology, one comes up against a very curious point. The plumber's mate, who was theoretically all in favour of retaliatory frightfulness, seriously believed that the worst strain on the nerves of a bomb-dropper was the definite act of dropping the bomb. Even his uneducated imagination pictured to itself the aviator's trembling hand as he launched the

engine of death (*vide* daily Press) on his unsuspecting victims. I leave out of account his natural ignorance of the mechanical action of bomb-dropping apparatus which led him into the pardonable error of supposing that a bomb is thrown overboard and had therefore better be thrown straight.

Also, I admit that an aviator, especially on the first occasion, does experience some emotion as he waits for the precise moment at which to pull the release-lever as the sights "come on." But the emotion is the nervousness of "stage fright" more than anything else, the fear that he will miss his mark, and have to admit it when he gets home. Or one may perhaps even more justly compare it with the emotion or nervousness of a sportsman when after a long stalk he has a fair but long shot at a "stag of ten."

I do not suppose any bomb-dropper has ever given any particular thought to the feelings of those who happened to be in the way of his bomb. The mark itself is the thing, the process of getting the object aimed at is far too impersonal a matter to raise any emotion regarding the victims, except there be a feeling of more or less mild animosity against them.

In the case of trying to bomb gun-emplacements—especially anti-aircraft guns—the personal animosity is direct, and the prospect of hitting or missing the mark would cause very keen emotion, but not of the kind indicated by the plumber's mate, whose emotion, as imagined by him, may be condensed into the words, "My God! I may kill someone." I am told by those who know that, as a matter of fact, killing people becomes quite easy after a little practice. Personally, I have never been called upon to kill anyone, but I can quite understand the simple fact that killing human beings is not really any more disgusting or conscience-weighting than killing any other animal, provided that the necessity is sufficiently great.

But you see, do you not, the peculiarly tender-hearted views held at the bottom of his heart by the British workman who was reproaching others for being too tender-hearted?

THE REAL ARTICLE.

On the other hand, the following true story of the real article indicates how wide a gap there is between the true military class and a certain type of workman. The youngster I have in mind I have known for years. He is one of the cheeriest chaps I know. An absolute white man, a sportsman, kind-hearted, good-natured, and amusing. An exceedingly dutiful son, as sons go in these days, and possessing singularly charming manners. In fact, any woman would describe him as a thoroughly nice boy.

He had flown a great deal before the war, and he has been flying practically without a rest ever since the war started. After a lot of coastal work he went abroad, and though he did good work it was evident that even if he was not losing his nerve he was getting stale.

I may say that, being an exemplary young officer, he has never broken King's Regulations respecting "communicating to the Press" by writing to me, and he does not know that I know what I know. Anyhow, I do know that it was evident from his letters to friends at home that he was getting mouldier and mouldier and less and less fit for work. People began to think his nerve was going, but all that was happening was that he was getting "fed up."

Then one day he had a bit of luck. He went out and dropped a large fat bomb smack on top of a large fat dome, which crumpled like a meringue when you hit it with a spoon. After that he cheered up and felt much better. His letters home had the old cheerfulness, and people I know who know him and have come home tell me that he is quite himself again.

Curious study in psychology, is it not? He had no animosity against that dome, and as I gather that most of our people in the East rather like the Turks—who fight like gentlemen and treat their prisoners decently, whether wounded or unwounded—I do not suppose he had any animosity against the Turks. Therefore his improvement in mental health can only be accounted for by the soul-satisfying spectacle of seeing his bomb hit something that collapsed nicely. The one thing I cannot see is any trace of his being too soft-hearted to drop bombs on anything or anybody who is silly enough to get in their way.

The next time you feel really mouldy take a large glass jar, put it on a wall, and shy stones at it till it smashes with one gorgeous crash; then you will feel better and will begin to understand the satisfaction of getting a bomb home in the right spot.

Of course, your pet enemy's best plate-glass window is a more satisfactory target, but it is apt to come expensive, so unless you happen to be part of an army of occupation in an enemy country it is better not to destroy other people's property in endeavouring to cure yourself of mouldiness.

THE N.C.O. PILOT QUESTION.

The old question of officer-pilots and N.C.O.-pilots is closely mixed up with the psychology of flying, and it is a pity that senior officers in both Services do not pay more attention to the question. I know of instances where men who are excellent fliers, and who really love flying, are frankly and openly afraid of crossing the enemy's lines because of the anti-aircraft guns. They are game to fly to any amount, and they would not mind tackling an equally armed German machine on level terms, but they are frankly afraid of "Archie." Some such have gone back to their regiments, some are still valuable as pilots or for their practical knowledge of aeroplanes, and they are kept on jobs behind the lines or on the ground.

Some pilots are afraid to admit that they are afraid and go on flying, only their engines have curious habits of stopping in the air and letting them down behind our own lines, or their machines need more repair than others and fly fewer days a week.

The worst of it is that senior officers, such as squadron commanders and wing commanders, get to know these things and occasionally the innocent suffer for the guilty. I have heard, for instance, of a chap being turned out of his squadron and sent home because he would not cross the lines on reconnaissance. The real reason was that he was on an old machine which had a maximum speed of 50 to 55 miles an hour, and when he got up aloft he met a 50-mile wind from the east or thereabouts which held him stationary over a bunch of Archies for some minutes. Having got out of that trouble by diving he ran into the area of another bunch, and as he offered practically a stationary target and could not in any case follow the course mapped out for him, as he could not carry enough petrol to cover the distance out against the wind, he simply turned round and came home. Whereupon he was practically accused of cowardice, and sent home. Of course, that may have been only an excuse because his C.O. did not like him personally, but as an official reason it is a blacker mark against him than mere personal unpopularity.

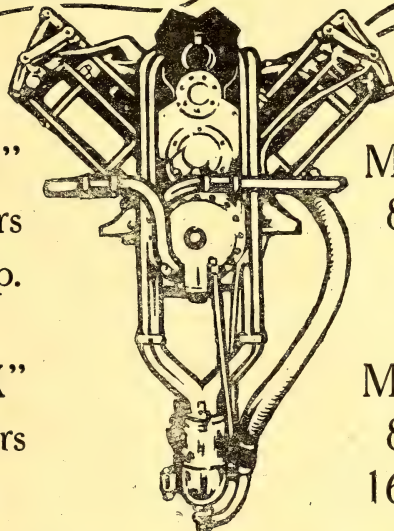
A CONVERSE CASE.

The converse of that case came to my hearing the other day. There was a sixty-mile wind from the west, and there were heavy clouds at 1,000 feet. Orders came from Corps Headquarters that information was wanted concerning a certain stretch of country a matter of 40 or 50 miles behind the enemy lines. R.F.C. Headquarters sent the order along to the squadron.

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ERNEST B. H. LANDER, 1915.

Someone in authority said, "Army reconnaissance must be done, regardless of consequences." It was obvious that a 70-mile-an-hour machine would do the outward journey in about 25 minutes and would take five hours to get back, and that with a speed of only ten miles an hour against the wind it would certainly be hit if it came below the 1,000-foot clouds for information. And, anyhow, as it could only carry fuel for $4\frac{1}{2}$ hours, it was hopeless to expect it to get back unless the wind dropped or changed right round to the north or east in the meantime.

Nevertheless, the boy whose turn it was to go out on reconnaissance went quite cheerfully, and as the wind did not change he did not get back. At the moment of writing I have not yet heard whether he and his observer have been taken prisoners or killed by anti-aircraft guns. He was, I gather, a youngster of quite the best type, a type which is none too common in these days when—as an older officer remarked of a certain corps recently—"one does not exactly put it on one's cards." Anyhow, he showed the proper spirit, for he obeyed orders without arguing.

A SIMPLE SUGGESTION.

One merely ventures to suggest, in all due humility, that senior officers whose time is very fully occupied with the administration of their wings or squadrons, as the case may be, might appoint officers chosen for their knowledge of weather conditions and the relative capabilities of the different machines under their command to act as technical advisers on such matters.

If it is the turn of a certain officer to go out on the long reconnaissance and his particular machine is not fast enough to make the journey with certainty in the prevailing wind, the said technical adviser might be permitted to suggest the sending of another pilot on a machine better suited to the job. And if the job is impossible with any existing machine, it might be made permissible for the fact to be submitted to Headquarters. Some such arrangement would, I feel sure, save pilots and machines, and the knowledge that such a system existed would react favourably on the mental state of all the aviators concerned.

THE PSYCHOLOGICAL EFFECT.

A senior officer may be a wholly admirable administrator, he may bring his command to a very high state of mechanical efficiency, and yet by sticking too severely to "the rigour of the game" he may overstrain the *moral* of his pilots and observers. No soldier minds dying or being wounded for his country,

but he hates being wasted on a job which has not even the offchance of a forlorn hope, and if he thinks he is going to be wasted he is apt to try and wriggle out of doing the job he is supposed to do.

The senior officer who is known to be most careful of his men is always the one who can, when the real pinch comes, induce them to do things which a less well cared for body of men would shy at, for his men know that whatever he may seem to be doing he is not throwing them away for nothing.

In a branch of the Service like flying, where a comparatively junior officer may know more of the technique of the game than his seniors, it is most important to remember this, for machines and conditions change so rapidly that a man who was a passably good flier two or three years ago can have no conception of what it feels like to handle a modern aeroplane under war conditions, and may underrate the nervous strain owing to his belief in the improvements in modern machines. Unless he studies their psychology very carefully he is liable to undermine his own officers' confidence in his ability.

I do not for a moment intend these remarks to apply to any one senior officer. They merely suggest themselves as possible results of existing circumstances, and it is a fact that if we had taken the trouble to foresee the possible results of circumstances existing two or three years ago, or even two or three months ago, the present war would be in a different state and in very different places from where it is to-day.

A NECESSARY STUDY.

Probably the study of psychology is not the favourite pastime of officers in either Service—that is another point on which the Germans score heavily—but it ought to be. As soon as someone in high places takes the subject seriously we shall see the introduction of a new grade and a new type of pilot in both Services. We shall see the grade of "pilot-aviator"—or the rating of "airman" if you wish—I know the Navy thought at one time of introducing it, and in this connection the word would be correctly used.

If only someone would realise that by giving a badly bred youngster a temporary commission and the honorary rank of gentleman one does not necessarily alter his psychology and make him suitable to become a pilot, much would have been accomplished.

I suggested a week or two ago that we must have N.C.O.-aviators. A friend of mine in one of the Services evidently took me too literally and imagined that I meant that because a man had taken his certi-

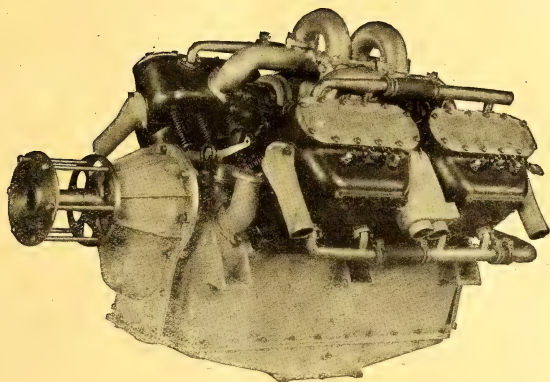


A side view of the Geest monoplane mentioned recently.

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ficate at a civilian school he should be made an N.C.O., or Warrant Officer, directly he passed the doctor for the Service. "God forbid," said he, "that I should have any of them as N.C.O.s in my squadron. They would have the discipline inside out in a day."

Far be it from me to suggest any such thing. What I meant was that we must have pilots who are not commissioned officers. My scheme is perfectly simple. It is merely this:—

A SIMPLE SCHEME.

Institute the rank of "pilot-aviator," or "airman," the holders of that rank to be pilots and pilots only. Give them no hand in the discipline of the squadron, and give them no command over anyone except the particular mechanics told off to look after their particular machines, and let their command over these mechanics exist only while they are working on the said machines. Let them have their own mess, and let them have the precedence, if you like, of a warrant officer, so that they may be entitled to a salute as befits the work they do. Let it be understood that they have every opportunity of rising to commissioned rank if they do well after a certain probationary period on active service, or on actual flying duty at home; but give them no prescriptive right to a commission.

Let it be a rule that all civilians must pass through this rank and that no commissions will be given in the R.N.A.S. or R.F.C. except to officers already holding commissions in the Navy or Army, or to "airmen."

This would bring in a heap of men who have the makings of good fliers and who refuse to enlist because they know they will get no flying if they do. If a man is keen enough to spend a hard-earned £75 or £100 at a civilian school in learning the elements of flying it shows he is keen, and it is criminal waste of good material to throw that man out in favour of some weedy youth who has had enough smattering of education to scrape through the easy requirements of to-day for a

commission. Therefore it would be better to take those men in as probationary "airmen" and return their school fees to them when they qualify for naval or military service.

We are wasting good men every day by not doing this, and we are wasting money and time and smashing aeroplanes every day in trying to teach direct-appointment people to fly who will never be even temporary aviators, let alone temporary gentlemen.

AN UNDESERVED PREJUDICE.

There is a prejudice both at the Admiralty and War Office against civilian schools, and I freely admit that some of the prejudice is justified. Nevertheless, it must be remembered that most of our best Service aviators are civilian trained.

I know of men who have been warned by Admiralty or War Office officials not to go to civilian schools, and have been told to wait, on that eternal "Waiting List," till they were wanted. In spite of that, they have gone and learned at their own expense, have promptly been snapped up by one Service or the other when they have taken their tickets, and have been out flying on active service when the official request arrived for them to present themselves for examination with a view to appointment on probation. In certain schools practically every pupil who has taken his certificate is now flying on Service, and yet certain officers in Whitehall consistently endeavour to crab the same schools.

If the schools were properly encouraged and advised by the Services they could be made very valuable sources of supply of "airmen" if not of commissioned officers, and Whitehall is throwing away most useful material by not using them properly.

It is all a question of psychology, not only of the psychology of the pilots but of people in the Services whose peculiar views prevent this country from using to the best advantage the masses of magnificent human material available—C. G. G.

THE ALLOTMENT OF AEROPLANE MATERIAL AND PARTS.

There seems to be good reason for an investigation of the control of supplies of raw and partly worked-up material to the various aeroplane makers. Ever since the demand for such material became so extraordinarily large the present method of procedure has contributed very much to the detriment of the output of contractors, sub-contractors, and sub-sub-contractors, and to the disorganisation of their works.

Under the present system, what happens is something of the following nature. Aeroplane maker "A" has been allotted a contract for a number of machines. He immediately commences to place orders (marked "Urgent" or "Very Urgent") for the material he needs with the maker of it, "B," in order to complete the contract. Further than this, he generally has "Chasers" who call upon "B" periodically and worry him with tales of "Empty stores," or "Held-up machines."

In this way "B's" time is wasted to a considerable extent, and his factory too often disorganised by his endeavours to oblige all and sundry. The extent to which his courtesy and sincerity is abused he is seldom able to ascertain, not knowing the actual requirements of "A" or the real condition of his stores, and as the result supplies equally badly needed by contractors "C" and "D" are held up.

The desire of "A" to fill his stores weeks (perhaps months) before he actually needs material is quite legitimate in peace time. Extraordinary times call for extraordinary measures and extraordinary men to carry out those measures.

There are men now serving in certain inspection departments who are ex-works managers, and understand the feelings and desires of men of their own calibre. Such men are eminently suitable for the responsible duty of visiting such men as "A" in a friendly way, glancing at their stores and *contract papers*, and finally rendering much valuable assistance by advising such men as "B" what "A's" immediate requirements are as compared with "C" and "D."

By the institution of such a system of allotment of material everything turned out would be used as soon as ready and we should avoid the inefficiency due to the stores in "A's" shop being full of certain material or parts for months, while the works are waiting for other material which already exists in "C's" or "D's" stores, whose works are waiting for the stuff "A" has got.

THE AERONAUTICAL INSTITUTE.

Professor G. H. Bryan, F.R.S., has resigned from the Executive Committee of the recently founded "Aeronautical Institute of Great Britain" (which body should be carefully distinguished from the Aeronautical Society of Great Britain, founded in 1866). In regard to his decision Professor Bryan states:—"When the Secretary (of the Institute) invited me to serve on the committee and enclosed a prepaid telegraph form for reply, I certainly did not realise the character of the committee, and I do not think he could have realised the nature of my qualifications and disqualifications. Had the proposed-committee been a large and thoroughly representative body my name might not have been out of place on the list, but I cannot think that an executive committee containing *two* mathematicians out of a total of five is likely to appeal to those

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responsible for the manufacture and production of aircraft."

Professor Bryan occupies a somewhat unique position in the aeronautical world. Eighteen years ago he formed the opinion that purely mathematical investigations would play an important part in the development of aviation, and from that time onwards he has made these particular problems his special study. (It will be recalled that in May of this year he received the Gold Medal of the Aeronautical Society and read the Wilbur Wright Memorial Lecture before that body.) He has refused to divert his attention to the more fascinating attractions of practical aeronautics. As he himself says:—"There are plenty of people able and willing to build aeroplanes and to fly on them, but you may turn over pages and pages of mathematical journals without finding a single reference to aviation among them." He is now busily occupied on a number of problems connected with the motions of aeroplanes, and naturally does not wish to express opinions on practical questions on which he makes no claim to be an authority. Lastly he points out that he is not a member of the Government Advisory Committee for Aeronautics, as has been erroneously stated in announcements of the "Aeronautical Institute."

THE HUMOURS OF WAR.

A recent visitor to the Royal Aircraft Factory sends a copy of a notice which is displayed on the public notice-board in that establishment for all and sundry to read. It deserves wider publicity. It reads thus:—

The following Communication has been received from the Director-General of Military Aeronautics, War Office, London:

"S.R.A.F.

"I am directed to convey to you and to your staff the very cordial thanks of the Director-General of Military Aeronautics for the hard and self-sacrificing labour which you have given to the supply and maintenance of aeroplanes and their accessories for the Royal Flying Corps. By your efforts, in spite of our deficiency at the beginning of the war, the Royal Flying Corps is now equipped with all essentials; and the Director-General wishes me to say that we only have to continue to work as we have in the past to place the Royal Flying Corps in a position to meet all demands required of it.

"Dated 3-11-15.

(Signed) —, A.D.M.A."

[Officers of the R.F.C., and of the R.N.A.S. also, not to mention members of the aircraft industry, will be interested in this tribute to the R.A.F. One can only assume that the higher authorities are unaware of the methods of the lower grades in the R.A.F., and of the work that might be done under better conditions. The suggestion that the letter is an incisive piece of sarcasm is not worthy of consideration.—Ed.]

SPOTTING AEROPLANES.

The task of infantry officers in deciding what is an enemy and what a friendly aeroplane with a view to aggressive measures or otherwise is difficult, because it takes long experience of observation for the layman to learn how to recognise the type of an aeroplane from the many aspects in which it may present itself.

Photographs and sketches are helpful, but they have their limitations, so a few remarks on the principles of identification may assist somewhat.

Generally speaking, machines in which the engine projects above the cowl should be viewed with suspicion, and also tractor machines when the radiators can be seen outside the fuselage. With a pair of good glasses it is generally possible to see whether there is a claw brake fitted to the cross-axle. This is almost exclusively a German feature.

There are, of course, a certain number of German machines of the scout class, but these can generally be distinguished from British and French machines by the

arrangement of their tails. In most cases the fuselages of German scouts are considerably longer in proportion to the span of the machine than are British scouts. This is apparently because the German pilots like to have plenty of elevator leverage.

Great caution, however, should be taken in deciding whether a strange looking machine is an enemy aeroplane or not, because there are several types of weird machines, which it is impossible to illustrate, in use both by the French and British.

Generally speaking, all pusher machines should be given the benefit of the doubt, as the Germans do not seem to use very many of them at all, and the Allies are using quite a number of different types.

Usually a machine which has rounded wing-tips, like the Blériot, is one or other of the Royal Aircraft Factory productions, whether it happens to be a tractor or a pusher.

INSPECTION.

(Lines suggested to a lady reader by a recent Royal inspection.)

Artillery we know—Cavalry we know—Infantry we know—but—What are These?

What are these, in grease appearing,
These before my eyes who stand,
Each an aerial helmet wearing,
What is all this oily band?
On your discretion I don't reflect,
But—what are these whom I inspect?

These are they who have contended
England's glory to maintain,
Flying till they were expended
In a greasy aeroplane.
(Such as well the flight sustain
Can a pilot's ticket gain!)

These are they who are not number'd
With the so-called Might-have-beens—
They will shortly scour the heavens
Seeking pirate submarines—
They are ranked with the "Aplombs"
When they've learned to drop their bombs.

What are these in shiny garments,
Oil-exuding as they stand,
Armed with little shifting-spanners,
What is all this curious band?
Are they whalers from the sea?
What, I wonder, can these be?

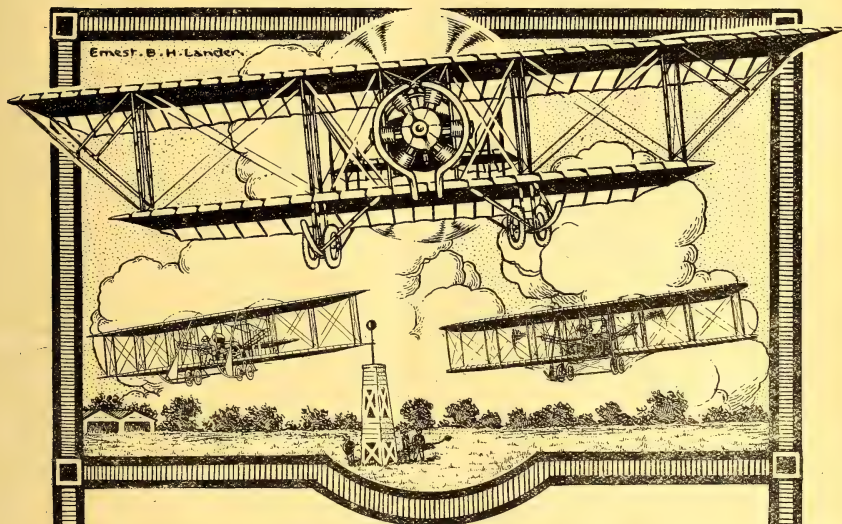
These are they whose slacks are ruined
Sore with oil, and petrol tried,
Wrestling, aye, with wire and rubber,
For the land they've glorified—
These—so please Y—r M—y—
*Are Y.O.U.I., R.F.C.

These, who for their King and Country
Left behind the Hearth and Home,
Labour night, and day, and always,
In what's called an Aerodrome.
What they don't know isn't much
Of stress, and streamline, strain, and such.

These are they who have not rested,
Seeking ever some new wheeze,
Who for life have oft contested,
Scorning either bump or breeze.
These we call "The Fly and Fit"!
These, Y—r M—y, are IT!

* Young officers undergoing instruction.

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GREAT BRITAIN.

From the "London Gazette," November 23rd, 1915.

The King has been pleased to give and grant unto Maj.-Gen. Sir David Henderson, K.C.B., D.S.O., commanding the Royal Flying Corps, and Commodore Murray Fraser Suter, C.B., R.N., Superintendent of Air Craft Construction, his Majesty's Royal licence and authority to wear the Cross of Commander of the Legion of Honour, which decoration has been conferred upon them by the President of the French Republic in recognition of valuable services rendered by them.

The King has been pleased to give and grant unto Wing Com. Arthur Murray Longmore, R.N.A.S., Actg. Com. R.N., his Majesty's Royal licence and authority to wear the Insignia of Officer of the Order of the Crown of Belgium, which decoration has been conferred upon him by his Majesty the King of the Belgians in recognition of valuable services rendered by him.

The King has been pleased to give and grant unto Capt. James Valentine, Royal Flying Corps, Special Reserve, his Majesty's Royal licence and authority to wear the Cross of Chevalier of the Legion of Honour, which decoration has been conferred upon him by the President of the French Republic in recognition of valuable services rendered by him.

ADMIRALTY, November 18th.

R.N.V.R.—To be temp. lieut.: Vivian Hewett. November 18th.

WAR OFFICE, November 23rd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): W. B. Young. October 1st. H. J. C. Smith. October 9th. October 13th: A. W. Kilgour. A. Goulding. J. J. Lynch. October 18th: S. B. Lee, V. P. Cronyn. H. L. Conner. October 21st. J. G. Bulger. November 1st.

From the "London Gazette" Supplement, November 24th, 1915.

WAR OFFICE, November 24th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—November 6th: Lieut. I. Macdonell, Ld. Strathcona's H. (R. Cans.); Sec. Lieut. E. A. Kelly, S.R.; Sec. Lieut. E. W. Barrett, S.R. November 10th: Temp. Sec. Lieut. G. B. Ward, att'd. N. Staffs., and transf'd. to Gen. List; Sec. Lieut. A. L. Macdonald, Royal H., and seconded. November 11th: Sec. Lieut. A. W. C. V. Parr, Rifle Brig., and seconded; Sec. Lieut. D. Cleaver, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) D. Cleaver confirmed in rank. W. W. Stenning to be sec. lieut. (on prob.). November 2nd.

From the "London Gazette" Supplement, November 23th, 1915.

WAR OFFICE, November 23th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Coms.—Lieut. E. J. E. Hawkins, I.A.R. of O., from a balloon officer, and to be temp. capt. whilst so employed. November 6th. Capt. K. P. Atkinson, R.A., from an eqmnt. officer. November 7th. Capt. Hon. L. J. E. Twisleton-Wykeham-Fiennes, Ox. and Bucks L.I., T.F., from a flying officer. November 10th. Sec. Lieut. A. C. Wright, S.R., from a flying officer, and to be temp. capt. whilst so employed. November 13th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) W. D. M. Bell confirmed in rank. To be sec. lieuts. (on prob.): W. H. Date. November 11th. H. Baynes. November 15th.

From the "London Gazette," November 26th, 1915.

The "London Gazette" of November 26th announces that the King has been graciously pleased to give orders for the appointment of the undermentioned Officer to be a Companion of the Distinguished Service Order, in recognition of the service described below:—

Flight-Commander JOSEPH RUSCOMBE WADHAM SMYTH-PIGOTT, R.N.

On the night of November 13th-14th Flight Commander Smyth-Pigott volunteered to attack the railway

bridge at Kuleli Burgas. He was able to locate the bridge by the moonlight shining on the river, and descended to within 300 ft. of it before releasing his bombs. He was heavily fired on from several places, and, in spite of trouble with his engine, which commenced before he reached the bridge, he returned safely to his base after a night flight which had lasted over four hours.

[Lieut. Smyth-Pigott is the more to be congratulated on his gallantry, as he suffered in 1913 a very severe smash at the Central Flying School which broke both his legs so badly that it was feared for some time that he would never be able to walk again.—Ed.]

* * *

ADMIRALTY, November 22nd.

ROYAL NAVAL AIR SERVICE.—Actg. Flight Lieut. A. O. French-Brewster confirmed in rank of flight lieut. October 4th. To be temp. lieut.: F. H. Smith. November 24th.

ROYAL NAVAL VOLUNTEER RESERVE.—To be temp. Lieut.: William H. Sayers, November 24th, 1915.

* * *

From the "London Gazette" Supplement, November 27th, 1915.

WAR OFFICE, November 27th.

REGULAR FORCES.—MEMORANDA.—1st. Class Air Mech. C. H. Chapman, R.F.C., to be temp. sec. lieut. September 30th. (Substituted for notification in "Gazette" of November 22nd.)

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—G. Iredell to be sec. lieut. (on prob.). November 3rd.

* * *

From the "London Gazette" Supplement, November 29th, 1915.

A Supplement to the "London Gazette," issued on November 29th, announces that his Majesty the King has been graciously pleased to approve of the undermentioned promotion:—

BREVET LIEUTENANT-COLONEL.

Major (temporary Lieutenant-Colonel) D. S. MacInnes, D.S.O., Royal Engineers, temporary Assistant Director of Military Aeronautics, War Office.

* * *

WAR OFFICE, November 29th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) confirmed in rank: C. Faber, E. Selby, J. B. Fitzsimons. A. E. Thorne to be Sec. Lieut. (on prob.). November 11th.

NAVAL.

The following appointments were notified at the Admiralty on November 24th:—

ROYAL NAVAL AIR SERVICE.—Temp. Asst. Engr., R.N.R., L. G. Ellis entered as proby. flight sub-lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 23rd.

ROYAL NAVAL VOLUNTEER RESERVE.—Lieut.-Com. J. C. Wedgwood, M.P., D.S.O., promoted to the rank of temp. com., R.N.V.R., with seniority, May 10th.

* * *

The following appointments were notified at the Admiralty on November 25th:—

ROYAL NAVAL AIR SERVICE.—Coms.—H. D. Briggs and H. F. Smyth-Osbourne graded as wing coms., to date November 11th.

Acting Flight Lieut. A. O. French-Brewster confirmed in rank with original seniority, and reappointed to "President," additional, for R.N.A.S., November 22nd.

Temp. Lieut., R.N.V.R., G. T. Davies entered as proby. flight sub-lieut., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date November 24th.

Mr. E. T. Henderson granted a temp. commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for duty with armoured car squadrons, to date November 23rd.

Messrs. J. R. Swanson and W. H. Bedford granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date November 28th and November 24th respectively.

Flight Sub-Lieut. (Temp.) F. H. Smith's commission as temp. flight sub-lieut. terminated; granted a temp. commission as lieut., and appointed to the "President," additional, for R.N.A.S., to date November 24th.

* * *

The following appointments were notified at the Admiralty on November 29th:—

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ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieuts., R.N.V.R.—H. H. King and J. C. M. Lowe promoted to the rank of temp. Lieuts., R.N.V.R., both with seniority November 27th.

The following chief petty officers have been promoted to the rank of temp. Sub-Lieuts., R.N.V.R., all with seniority November 27th: W. A. Hooker, F. W. Temple, B. W. Briggs, A. E. M. Hoes, and W. G. C. Munsie, also A.B. K. V. Dollymore.

Mr. F. Towers entered as temp. Flight Sub-Lieut., with seniority November 27th.

Actg. Flight Lieut. A. O. French-Brewster confirmed in rank, with additional seniority, and re-appointed to the "President," additional, for R.N.A.S., to date October 4th. The undermentioned have been entered as proby. Flight Sub-Lieuts for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: J. W. Hobbs, G. F. Ross, P. E. Beasley, S. T. Edwards, and K. G. Macdonald, October 31st; H. G. Leslie, K. F. Saunders, J. K. Waugh, and D. H. Nelles, November 3rd; P. S. Fisher, October 27th; A. M. Shook, November 5th; A. G. Woodward, November 6th; and J. C. Watson, October 29th.

The Secretary of the Admiralty announces the following casualty in the Eastern Mediterranean:—

KILLED.

November 26th, 1915:—

Flight Sub-Lieut. John H. Rose, R.N.

Flight Sub-Lieut. J. H. Rose was born at Scarborough on May 18th, 1894, and took his certificate, No. 964, at the Hall School at Hendon on November 7th, 1914. Thereafter he acted for a while as assistant instructor, and after a period on the waiting list was appointed in April to the R.N.A.S. In a short time he proved himself to be a very capable flier, and was sent out to Belgium after a short probationary period. There he made several good bombing flights at night and won the esteem of his brother officers by his gallantry. By the ill-luck of his compass lights going wrong he was debarr'd from participation in the raid on which a Zeppelin was destroyed by another officer. Later he went out to the Dardanelles and acquitted himself well. He will be greatly missed by all who have met him.

He was the only son of Mr. and Mrs. J. H. Rose, of Ryton, near Malton, and was 21 years of age. He was educated at Orleton, Scarborough, afterwards serving his apprenticeship to the profession of engineering at the Scott Engineering Works, Bradford.

* * *

A descent by parachute was made near London on November 26th by Lieut.-Col. Maitland, Wing-Commander R.N.A.S. He dropped from about 10,500 ft. in 15 minutes, landing in Surrey. Col. Maitland's feat was undertaken, it is understood, for an official purpose from a balloon piloted by Flight Lieut. John Dunville and Flight Comm. Corbett-Wilson.

* * *

For the first time in history a seaplane, on Sunday morning last, shot down an enemy seaplane. It therefore seems proper to place on record the fact that the feat was performed by Flight Sub-Lieut. J. B. P. Ferrand, R.N.A.S., and it is thought, in the absence of official information, that he was flying an F.B.A. flying-boat, which is a kind of modified and much more lightly built Curtiss boat. The F.B.A., which stands for Franco-British-Aviation, will be remembered at the Paris Show of 1914, when their construction called for considerable criticism. Lieut. de Conneau, the Blériot pilot, and M. Schraeck, the pilot of the earliest Wrights, were responsible for them. Their success, like that of many other French machines, is due to the constructors being free to build their own designs without having their efficiency destroyed by the interference of Government "experts," as in this country.

* * *

Another gallant feat by a Naval aviator was that performed in the Balkans, as recorded in various papers last week, when a pilot descended in Bulgarian territory and picked up another who had been brought down by engine failure. The pilot in question is said to be Squadron-

Commander R. B. Davies, D.S.O., R.N., who had already been mentioned several times in dispatches.

* * *

An account of how Flight-Lieut. Redford H. Mulock, R.N.A.S., formerly of McGill University, bombed the airship sheds at Brussels has been published in Ottawa from a letter received from Major McKelvey Bell, of the Canadian Army Medical Service, who wrote:—

"OTTAWA, November 8th.

"He started off in mist and rain and flew more than a mile high, above the clouds, and he said that every time he came down a little to see where he was the Germans opened fire on him, and fired so accurately that he had great difficulty in dodging the shells.

"After he had been travelling nearly an hour and a half he came down through the clouds, and below him was a great, beautiful city, the most beautiful city he ever saw, with wide streets and splendid buildings.

"He knew where the Germans had their aerodromes, and he made direct for one of them. It was a large building painted in green and red and yellow, so that from a height it looked like the ground. He swooped down towards it, and the Germans opened fire on him with their guns, so that the shells burst all around him.

"Some of the shells were of a new type, which sent thousands of little balls of fire at him, with the idea, he thinks, of setting his aeroplane on fire. He sailed through them all and dropped a bomb on the building, then made another circle and dropped another one, and then another, and all the time bullets were passing him. One bullet went through the machine, but did not hit him. Then he threw out more bombs and turned for home. The Zeppelin shed was on fire by this time.

"The rain was driving so hard that every time he put his head out to see where he was it cut his face, and he could not see where he was going. He had only enough gasoline left to carry him straight home, and if he made a mistake he would have descended into the German lines."

Major Bell states that Lieut. Mulock left Ottawa as a sergeant-major in the 1st Artillery Brigade.

MILITARY.

The following passage in the telegraphic dispatch, dated General Headquarters, 7.50 p.m., on November 26th, deals with aircraft:—

(4) On the 25th twenty-three of our aeroplanes successfully bombed a German hut encampment at Achiet Le Grand (north-east of Albert). The enemy replied with a single aeroplane, which dropped six bombs near Bray, doing no damage.

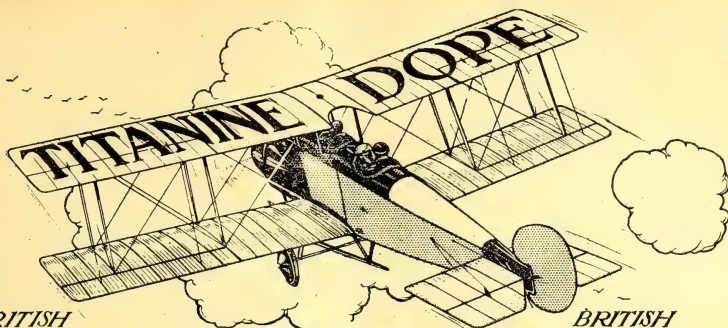
* * *

The following passage in the telegraphic dispatch dated 8.6 p.m., November 26th, from General Headquarters in France, refers to aircraft:—

(4) The enemy's aeroplanes were very active on November 28th. During the day there were 15 encounters in the air, as a result of which one hostile machine was brought down near Sequedin. One of our pilots fought with no less than five hostile aeroplanes during a single flight.

Bombing attacks were successfully carried out against the German aerodrome at Gits and an ammunition factory at Lachapelette. Fourteen machines attacked the former place, and nineteen the latter. Considerable damage was done in both instances. All our machines returned safely.

(5) Reports from the coast district state that German aeroplanes were active there on the 28th dropping bombs. During the day a French aeroplane brought down a German aeroplane, and a British seaplane brought down a German seaplane.

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In the afternoon a British aeroplane destroyed a German submarine off Middelkerke (it was seen to break in half).

[The fact that the action between seaplanes, which took place on Sunday morning, should be reported from G.H.Q. appears to indicate that the R.N.A.S. is now co-operating closely with the Army and is not conducting its own campaign. These R.N.A.S. detachments are now definitely under the command of the Admiral Commanding Patrols and are not directed in their operations by the Air Department at the Admiralty.

For the benefit of the draughtsman of the dispatch, appropos the last paragraph, one would like to point out that a thing breaks into halves, and not into one half.—Ed.]

* * *

The following casualty in the Expeditionary Force was reported on November 24th, under date November 18th:—

WOUNDED:

Capt. M. K. Cooper-King, Royal Flying Corps.

* * *

The following casualty in the Expeditionary Force was reported on November 26th, under date November 20th:—

PRISONER OF WAR.

Lieut. Sir R. J. Paul, general list, New Armies, atttd. Royal Flying Corps.

Sir Robert Joshua Paul, of Paulville, co. Carlow, whose seat is at Ballyglan, Waterford, is the fifth baronet. He is 32 years of age, and succeeded his father three years ago. He was educated at Repton and Trinity College, Cambridge, and went to Egypt, where he was for some time employed in the Irrigation Department at Cairo. When war broke out he received a temporary commission as second lieutenant in the Army, and subsequently joined the Royal Flying Corps during the operations at the Dardanelles, where he has been made prisoner.

The founder of Sir Robert Paul's family was originally a resident of Paulsworth, in the county of Durham, who became an officer in Ireton's Dragoons during the Parlia-

mentary war, went over to Ireland in Cromwell's army, and settled in county Carlow. In 1794 one of his descendants was made a baronet of Ireland.

* * *

The following appeared in the Casualty List published on November 27th:—

Previously officially reported Missing, now unofficially reported Prisoner.

Sec. Lieut. J. B. Robinson, Royal Flying Corps.

Officially reported Missing and unofficially reported Prisoner.

Capt. T. W. White, Australian Flying Corps.

[The latter appears under the heading "Mediterranean Expeditionary Force," but it is more probable that Capt. White was lost in Mesopotamia.—Ed.]

* * *

It is announced at Cheltenham that Second Lieutenant E. J. Fulton, of the Duke of York's Own Lancers and the Royal Flying Corps, who was reported missing after the British victory at Ctesiphon last week, is a prisoner in Bagdad. He is the younger son of the late Sir Edmund M. H. Fulton, C.S.I., of Elmhurst, Cheltenham.

* * *

The following appeared in the "Brandon Weekly Sun" of Canada:—

London, October 29th.—Lieut. Bell-Irving, only son of David Bell-Irving, of Lockerbie, whose family has many Canadian connections, has been killed while flying at Norwich. He crossed by aeroplane from France to England on leave a fortnight ago.

This note makes known the name of the officer whose name was omitted in the published descriptions of the accident at Norwich recently. Lieut. Bell-Irving had been flying on Service for a year and had done very gallant work in France.

* * *

It is to be noted regarding the latest, and well deserved, awards of the Cross of the Legion of Honour that Sir David Henderson was at one time Chief of the Intelligence Department in South Africa, and Commo-



A REMINISCENCE.—Brooklands before the War, taken from a German aeroplane—the Navy's old original D.F.W.

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dore Sueter was our leading submarine expert. Thus both officers proved their ability to conduct operations unseen by the vulgar eye. Now both find themselves responsible for having built up, *ab initio*, the particular branch of their respective Services which appeals most to the public. Curious swing of the pendulum, is it not?

* * *

An officer writing from near Bagdad says:—

"The aviators, who are harassing the enemy's retreat, say that the Turks are having awful trouble. They are falling back on their last defence, thirty miles south-east of Bagdad. There we shall probably have to defeat them before we enter the city."

FRANCE.

The communiqué of November 23rd says:—

During the 22nd inst. our aeroplanes at various points of the front were engaged in encounters with the enemy, resulting to our advantage.

In Belgium two German machines were compelled by our men to come down.

In the region of Reims two Aviatiks were pursued and turned tail.

In Champagne and on the borders of the Argonne five aerial duels took place, as the result of which three Aviatiks had to come down precipitately in their lines, another aeroplane fell disabled, and the fifth came to earth in flames.

* * *

The communiqué of November 24th says:—

The Turks, although well provided with ammunition, are showing themselves nervous and harassed by our aircraft, which bombarded the Constantinople-Dedeagatch railway line and damaged some of the works, and by the monitors and light vessels, which are frequently bombarding the Asiatic coast. They are constantly kept on the watch, and are obliged to oppose us with important forces.

* * *

The communiqué of November 27th says:—

During the day a German aeroplane fell in the Aisne a short distance to the east of Berry-au-Bac. The aviators saved themselves by swimming. Some shells from our batteries destroyed the machine.

* * *

The communiqué of November 28th says:—

Yesterday our aeroplanes dropped nine 90mm. bombs on the station of Noyon, and forced two captive balloons to descend.

This morning to the north-east of Thezey-St. Martin, in the region of Pont à Mousson, one of our scouting aeroplanes shot down a German aeroplane, which fell in the enemy's lines.

* * *

The afternoon communiqué of November 29th says:—

Yesterday one of our aircraft was obliged to alight near Dompevryn, on the left bank of the Meuse, in front of the enemy's positions. In spite of the violent fire of the German artillery the machine was only slightly damaged. The aviators are safe. [Compare with German communiqué.—Ed.]

* * *

The evening communiqué of November 29th says:—

Yesterday four German aeroplanes flew over Verdun and dropped some bombs without causing any material damage. By way of reprisal, five of our aeroplanes dropped over twenty bombs on the railway station of Briulles, to the south of Stenay. The line was cut, and a train which was travelling towards the north hurriedly put back.

GERMANY.

The communiqué of November 23rd says:—

A French biplane fell after a fight in the air near Aure, Champagne.

The communiqué of November 29th says:—

North of St. Mihiel an enemy aeroplane was forced to descend before our front, and was destroyed by our artillery.

* * *

On a German prisoner taken by the French was found a note from Willingen, dated Sept. 14th, 1915:—

"An aviator came over Donaueschingen yesterday and threw bombs. A house near us was set on fire, and the aviator fired with a machine gun on a train. He flew at a height of four or five metres only. A German aviator attacked him, but was brought down by the enemy at Kleugen."

* * *

Under the sneering heading "A Cheap Decoration," the "Morning Post," discussing the Iron Cross, says:—

"It is further reported by the Berlin newspapers that among the 6,000 persons on whose breast the Iron Cross of the first class has been pinned are 263 members of the military flying corps and airship division, 214 members of the crews of naval airships and sea-planes."

[It is quite possible that if one knew the numbers in the German air services one would find that these decorations were in no higher proportion than the D.S.O.'s and Military Crosses, and Distinguished Service Crosses in the R.N.A.S. and R.F.C., or than the Croix de Guerre and Médailles Militaires in the French Service d'Aviation. The sneer is a good deal cheaper than the decoration.—Ed.]

RUSSIA.

The communiqué of November 23rd says:—

On the Caucasian front there is no change along the whole line. In the Paseine valley our airmen successfully dropped bombs on the enemy trenches.

* * *

The following rather tall story left Petrograd on November 25th:—

Near Dwinsk Russian aeroplanes cut off an Albatros, which they allowed to cross the Russian lines. The Albatros rose high and circled frantically about for half an hour, attempting to escape. Finally it planed down into frozen marshland. When Cossack cyclists came up an hour later they found the aeroplane undamaged, but the pilot and observer were frozen to death.

[The story may, of course, be true, although it comes from Russia. The source is the ingenious "Reuter," but the notion of Russian aircraft "allowing" a German to come over their lines and the "frantic attempts to escape" are worthy of the otherwise excellent "Morning Post's" Petrograd bombast. When one reads of Cossack cyclists, one wonders whether some ingenious German paper will draw the deduction that the Cossacks have been reduced to eating all their horses and now have to ride bicycles. German journalists are so very English in their fondness for drawing erroneous deductions.—Ed.]

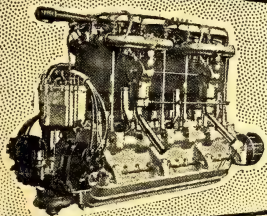
AUSTRIA.

The "Morning Post" of November 26th publishes the following account from Budapest of an Austrian aviator's sporting effort:—

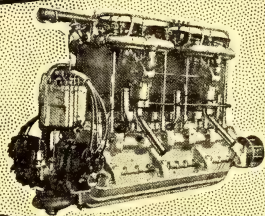
The naval officer who was in charge of the sea-plane which bombarded Venice from the air not long ago has given an account of the bombardment to a Hungarian journalist in Trieste. The pilot is described by the correspondent as a very young man, who left the naval school just before the war began.

"I left the base with an observer at 9 o'clock in the evening," he said, "and arrived over Venice at 10.15. We were over the town a quarter of an hour, and arrived back before midnight. Originally we intended to throw bombs on the naval arsenal, on the railway station, on the electric depot, and on other military objects, as a reprisal for the aerial bombardment of Trieste. It was a beautiful night, a full-moon allowed us at the outset

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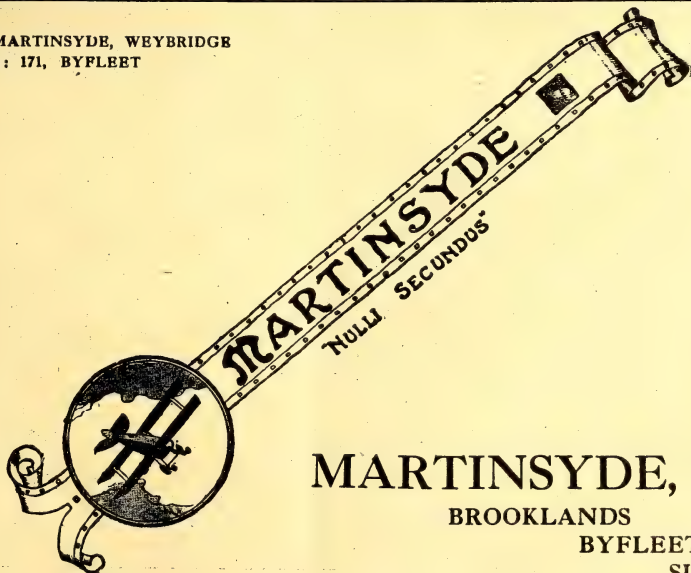


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to see everything quite clearly, but afterwards thick clouds obscured the view. I cannot describe the route we took, for it would reveal our starting point. The railway line outside the city on the long bridge gave us the first hint as to where we were. At this point the moon disappeared, and we flew towards the city in total darkness. We could hardly find it, for the Italians are very cautious, not one lamp is lighted in the streets, not one illuminated window can be found, making it almost impossible to direct oneself at a height of 3,000 feet.

[One may remark, for fear this may be taken as proof of the efficacy of darkening the streets entirely, that by the time mentioned the moon had "disappeared" and that "thick clouds obscured the view." The ability to see everything despite the fog is shown in the very next paragraph. A few strong lights showing upwards would have blanked out the canals and ships and so forth, and, though they might have made it easier for him to "direct" himself at a distance, it may be noted that he got there all right and was able to see perfectly at a low altitude, simply because there were no lights.—Ed.]

"The first object we could distinguish was the Tower of St. Mark. The city was enveloped in fog, but nevertheless we could soon make out the different canals, especially the Grand Canal, and then the small squares came into sight. We could also clearly distinguish the ships in the harbour. When we threw the first bomb, the town began to wake up to the occasion. Suddenly numerous lamps were lighted, searchlights played by the dozen, and at the same time the guns began to fire at us furiously. The searchlight on the Tre Porti particularly lit us up, and gave a chance to the gunners, who aimed well and made us very uneasy.

"Nevertheless, we escaped, and threw our bombs, one on the arsenal, two on the railway station, and three on the electric depot. Among these, one was a fifty kilogram bomb, the rest smaller incendiary bombs. We could also perceive the effects of the bombardment, for at four different points we saw flames. We are convinced that one of the depots at the arsenal caught fire, and we could see the flames when we were far away from Venice on our way back."

ITALY.

The communiqué of November 24th says:—

Enemy aviators dropped bombs on Arsiero, doing slight damage, and on Ala, where four soldiers were wounded.

One of our air squadrons bombarded the enemy aviation park at Aisovitz and another which is being organised at Aidussina, and on the railway stations of Vogersko, Aidussina, Reifenberg, and San Daniele. Our aviators, who were subjected to the usual anti-aircraft gun attack, returned safely.

* * *

From the tenor of recent notes dropped by the enemy, and by the way that the smaller cities of Venetia are preparing, one can forecast a greatly intensified campaign of bombing in this part of the war theatre, as a set-off to the Austrian setback at Gorizia, of course.

By the by, the building of the State schools with an eye to their military usefulness is a leaf that other nations too might have filched from the German book. The flat roofs of some of these buildings seem likely to turn into convenient platforms for defensive weapons.

The building of "Navy 'planes" in and about Milan is proceeding in a way that augurs exceedingly well for



(Photographs by F. N. Birkett, Shepherd's Bush.)

SOME RECENT HALL SCHOOL PUPILS:—Left to Right, Messrs. Philpott, B. G. Watson, A. T. Watson, F. Hall, P. E. Bayly, P. Snowden, R. Gay, W. Huggan, A. E. Hatchman, J. W. Gordon, H. Hamer, W. E. L. Seward, N. Bang, A. de Brandon, V. M. Wenner, and W. O. Russell.

many people. I have reason to know that the Vigilance Offices (Inspection Dept.) are kept quite busy, and that one at least of the smaller Lombard Lakes is not as secluded as formerly.

It is no secret that the Isotta Fraschini 160 h.p. has been found a useful power-plant for making things go.

Glowing reports of the Caproni 300 h.p.—illustrated early in the year by THE AEROPLANE—are about, and sorely tempt me to take up the ready-writer style (once used at Show times!) and pen paragraphs such as would surely get lost and waste away in the deserts of Censorland.—T. S. HARVEY.

BELGIUM.

It is reported from Holland that travellers who have arrived at Roosendaal from Brussels state that two aeroplanes of the Allies were seen over Brussels on Monday, November 22nd. They threw recent editions of the London and Paris newspapers into the city, and were out of sight before the German gunners could fire.

* * *

A report from Ghent to the "Telegraaf," Amsterdam, November 24th, states that on November 25th seven Allied aviators appeared in the vicinity of Audenarde, dropping bombs on the railway bridge across the Scheldt, near Eyne. This bridge is on the line from Courtrai to Brussels. Five bombs were dropped and destroyed the bridge, but on the following day Belgian civilians were ordered by the Germans to rebuild it.

HOLLAND.

It is reported that the occupants of the German seaplane which landed on Sunday, November 21st, on the Island of Schiermonnikoog have been interned by the Dutch Government.

SWEDEN.

According to "Aftonbladet," the well-known explorer Dr. Eric Mjöberg is preparing a research journey to New Guinea, the expedition to be started from the coast next spring or summer, and to be carried out by five scientific men by aeroplane. The aeroplane shall be so big that it can carry five persons and 500 kilograms in addition. Dr. Mjöberg has learned flying lately, and, further, the Farman pilot, Captain Sundstedt, is to partake.—H.

SERVIA.

The "Morning Post's" Balkan correspondent, writing of the Bulgarians in Servia, says:—"They have produced no aeroplanes so far, though German aviators have already been seen on the Strumitza front. Their batteries have great respect for the French aviators, and stop firing directly they see one coming."

BULGARIA

A Sofia message to the "Berliner Zeitung am Mittag" states that British aeroplanes and sea-planes have bombarded the road and railway from Dedegatch to Badoma, especially near Sere. One sea-plane was damaged by Bulgarian guns, but all escaped.

SCIENTIFIC TERMS ILLUSTRATED.



A Moment of Inertia.

U. S. A.

A writer in the New York "Sun" quotes Mr. Henry Woodhouse, of the Aero Club of America, as saying that the Curtiss factories in Buffalo are turning out twelve "amphibious Dreadnoughts" daily, and the Curtiss Canadian factory in Toronto five, adding that virtually all these machines are being shipped to England, mostly in parts.

Great Britain bought the original "America," and used it during the first six months of the war for hunting and destroying German submarines. In June last, twenty more of the same type were ordered, and these were shipped from New York in July, at least so he says.

"The new flying boat," said Mr. Woodhouse, "has two motors of 160 horse-power each. For a long voyage it could also be supplied with an auxiliary motor operating a water propeller, so that if anything happened to the regular propellers the machine could descend and make good time through the ocean.

"The new flying boat can carry a load of 3,000 lbs., including four or five passengers, and can travel as fast as 95 miles an hour. There are tanks for about 2,500 lbs. of gasoline and oil. Although the horse-power has been increased by 120, the whole consumption of fuel is less than that of the old 'America.' I should say the new machine could easily travel from Newfoundland to the Azores, and have three or four hours' fuel left in reserve when it got there.



Photographs by F. N. Birkett, Shepherd's Bush, W.

SOME GRAHAME-WHITE PUPILS WHO HAVE RECENTLY TAKEN THEIR CERTIFICATES:—Prob. Flight Sub-Lieuts. W. Man, F. J. Linnell, L. W. R. Hodges, R. Graham, T. A. Sadler, and H. F. Macleod-Fraser.

"It is equipped with an improved Sperry drift detector, whereby the pilot can tell whether or not he is on his course, and can also calculate his speed. Only England has the American boat, the use of which as a weapon against submarines needs little comment.

"The old 'America' has had a great career since she left our shores. For the first six months she was used in hunting submarines, and it is known that she sank at least three. Then she went on inspection duty, carrying observers and commanders from point to point in almost absolute safety. Now she is being used in the training of aviators.

"The flying boat," continued Mr. Woodhouse, "travels six times faster than a submarine, and three times faster than a battle-cruiser. Submarines and warships have to carry their own base of supplies, as it were. The aeroplane darts back to its base and out over the water again.

"From a cruiser's deck the observer is lucky if he describes the periscope of a submarine. The aeroplane observer, looking down, can make out a submarine even if it is sixty feet under water, and below that depth a submarine is useless. The flying boat is, in her way, three times as efficient as a cruiser, yet, instead of costing £300,000, she costs £5,000."

[It is quite interesting to see the Press Bureau passing all this information about the Navy matériel, even though it is weeks old and must have been known in Germany for some time before it was published in this country—apart from the fact that German agents in America would naturally have full particulars of these machines long before they were actually completed. Of course, there is a good deal of nonsense in Mr. Woodhouse's supplementary remarks, and readers can believe just as much or as little as they like of the whole story.—Ed.]

* * *

The New York correspondent of the "Daily Express," writing on November 7th, says:—

The Navy Department at Washington announces that by means of an ingenious "catapult" device an aeroplane was successfully launched for the first time from an American warship under way. The warship was the armoured cruiser "North Carolina."

"This," adds a statement issued by the department, "represents the culmination of a series of experiments which started in 1912."

The flight from the "North Carolina" was made in Navy Aeroplane AB-2, with Lieut.-Commander H. C. Mustin as pilot.

The device is in the form of a car propelled along a track. The aeroplane is landed on the car, secured in place, and the motor started. The aviator takes his place in the aeroplane. The car is propelled along the track at a gradually increasing speed to about 50 miles an hour, when the car is brought to a standstill, and the aeroplane is shot into the air.

The success of the new invention, according to the "Herald's" Washington correspondent, means, in the opinion of naval officers, that all vessels of the cruiser type will be ultimately equipped with the "catapult."

[The catapult-for-ships idea is very old, the present writer having dealt with it in 1911. British aeroplanes left ships under way as far back as 1912, but without catapults, and a Curtiss flying-boat was launched by catapult from a jetty either in 1912 or early 1913. Curiously enough, this form of launching has been neglected by the British Navy.—Ed.]

* * *

During the week ending November 6th the first of the Thomas naval seaplanes was given its first trials. It demonstrated its ability to plane on the water on its twin pontoons, and also showed that it could successfully withstand hard landings.

The Thomas instructor, Walter Brock, has gained great praise by his handling of the 1916 model flying boat, hav-

ing circled over the city on numerous occasions, flying often at a height of well over 3,000 feet.

The factory has recently enjoyed a visit of inspection from Alessandro Pomilio, the Italian aeronautical expert. He was chiefly interested in the demonstration of the Thomas aeromotor, and in the new 135-h.p. tractor biplane, expressing himself as being greatly pleased with both their design and construction.

AUSTRALIA.

The "Sydney Morning Herald" publishes a letter from a Trooper Bluegum at Gallipoli. He says:—

"This morning a German aeroplane dropped two huge bombs behind our lines. They exploded with a terrible blast, but did no damage. As the glistening bombs shot earthward, one of our chaps exclaimed, 'Ere comes 'er 'ymn of 'ate!'

"Yesterday we had a great laugh at a German airman. He went up with a big bomb, evidently intent on some frightfulness. A British aeroplane immediately sighted him, and started in pursuit. Then a couple of French airmen took the air and joined in the chase. With three of them hot on his trail, the German fled over the Turkish lines. The Allies gained on him, so to lighten his load he dropped his bomb overboard. But it landed on the Turkish trenches. They thought he must have been an enemy, for they at once opened fire with rifles, machine-guns, and anti-aircraft artillery, and the poor Taube had a very sultry time. Eventually, however, he escaped. The incident is hardly likely to increase the good feeling (which does not exist) between the Turks and their German dictators.

"Recently the Germans erected a new aerodrome 'somewhere in Gallipoli.' The French airmen sighted it, dropped a few bombs, set fire to the petrol store, and did considerable damage. A couple of nights ago we had an aerial night attack on the Turkish camps at the Soghan Dere. Our aeroplanes first fired with their machine-guns at the flashes of the enemy's rifles. Then they dropped a couple of 20 lb. bombs, which burst in the centre of the Turkish camp. Finally they dropped 300 arrows amongst the bewildered enemy."

CHINA.

A North China paper of October 14th gives a somewhat entertaining account of flying endeavours in China. It says:—

"The aeroplane is the latest sensation in Chêngtu. The new Governor brought two with him to the west, and has been busy getting them into training. The first attempt to fly was not a decided success. It was from within the city and the attempt to rise owing to the nature of the ground was a failure and the machine suffered some slight damage. A week ago, on the occasion of the President's birthday, another attempt was made. It was from the Phoenix mound outside the north gate of the city, the site of the main soldiers' barracks. That attempt proved much better and the aeroplane circled about the northern part of the city and returned safely.

"Yesterday invitations came to members of the foreign community to visit the place and see the machine, listen to a lecture upon its mechanism, and see it ascend. As the invitation was for eight o'clock in the morning only a few availed themselves of the opportunity. However, the flight was visible to all. Promptly at nine it left its moorings and circled the city completely. The humming of the machinery gave it a good advertising and young and old rushed into the streets. The little children were delighted. The old stared open mouthed. Even the students who are not supposed to be astonished at any thing could not restrain their jubilation and chuckled all over. The Governor is to be congratulated upon the success of his venture. As to whether or not there will be a school for aviation established here in the west, he will leave to future decision."



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THE R.N.A.S. COMFORTS FUND.

The response to appeals for this fund has shown some improvement during the last week, and contributions, particularly of the nature of warm garments, are coming in very well, but the time is not yet approaching when it will be possible to say that everything possible has been done for the comfort of the men of the Royal Naval Air Service.

The following cash contributions have been received: Directors of the Sopwith Aviation Co., Ltd., £50; the Proprietors of "Titanine," £10 10s.; Employees of Sopwith Aviation Co., Ltd., £6 7s. 2d.; Lady Mackworth, £5; Mr. G. Mawdsley Williams, £1 1s.; Mrs. Kinsey Peill, 5s. Amount previously acknowledged £1,291 10s. 7d. Total to-date £1,364 13s. 9d.

Owing to an error in transcription a donation of £1 was acknowledged for the second time last week. This accounts for the discrepancy in the total given last week and the amount stated above.

FOR PRISONERS IN GERMANY.

Muriel Countess Helmsley and Mrs. Rowton beg to acknowledge with thanks two further contributions of £4 16s. 6d. and £3 5s. 3d., from the employees of Vickers Ltd. at their Weybridge and Bexley Heath Works, respectively.

GOVERNMENT NOTICE.

The following notice has been received for insertion:—Messrs. Pashley Brothers, late of the Shoreham Aerodrome, Shoreham, Sussex, are hereby informed that if certain aviation stores belonging to them, which were left at the above-named aerodrome, but have since been removed to the Ordnance Aircraft Department, Farnborough, Hants, for safe custody, are not removed on or before the 15th day of December, 1915, they will be sold.—(Signed) E. DAVIDSON, Lieut.-Colonel, C.O.O., O.A.D.

AT SEA.

The British steamer "Balgownie," which arrived at Rotterdam November 27th from London, was attacked at 2.30 in the afternoon near the Noord Hinder Lightship by three German aeroplanes. Rifle and machine-gun fire, as well as bomb throwing, lasted for about 20 minutes without any damage being done to the vessel. The aeroplanes finally disappeared in a southerly direction.

INFLUENCE.

A reader of THE AEROPLANE writes:—"I heard an amusing case the other day. Boy, on leaving school, very keen to get into aeroplane trade. Father said, 'No.' Boy introduced AEROPLANE into household and insinuated same under father's nose. Father read, and became struck by words of wisdom and entranced by flying news generally. Boy apprenticed to Avro firm. His three years up at beginning of war, enlisted in Seaforth's (couldn't get in anything else), and after spending the winter in the trenches has at last exchanged into R.F.C.; is now 'somewhere in France,' and no happier fellow exists, especially when an Avro comes along to be renovated. Boy is understood to put up a 40-h.p. prayer every night for the prosperity of THE AEROPLANE. Now don't you feel flattered?"

PROPHETIC FIGURES.

The Danish correspondent of THE AEROPLANE turns attention to the following figures for the reflection to be extracted:—In the year 1709 King Charles XII, the big Swedish strategist, invaded Russia with an army of 40,500 men; 1812, 103 years later, Napoleon went against Moscow with 400,500 soldiers (ten times as much as Charles XII); 1915, still an advance in time of 103 years, the Germans and Austrians cross the Russian frontier with 4,500,000 soldiers (once more tenfold). Misfortune befall on Charles XII and Napoleon!—Hr.

A WATCHMAN'S NOTES.

The dropping of self and various other dangerous objects overboard seems likely to become a bad habit, and we most of us know how difficult habits are to give up at a moment's notice. Sooner or later, too, the peace Dove—no relation to the Rumpier or Prussian bird one hopes—will be around and dropping its olive branches, presumably where and when least expected.

What then will be the position of the absent-minded bomb-dropper with an inrooted habit of so doing? Even should he retire from circulation we shall still have with us the losers of tool-rolls, spare parts, wraps, results of shopping expeditions, and so forth, vide "Lost and Found" columns of any journal fostering travel by mechanical traction.

So clearly the trouble will need tackling. Any spare wire netting might be utilised of course for service as under-shields if the mesh were of suitable size, but it is to be feared (and hence these warning lines) that the matter will fall off the knees of the gods into the pockets of the lawyers.

Were all aircraft inventoried as to their contents and appurtenances on starting and arrival much red tape and a lot of unskilled labour might be employed. Indeed, so obviously impracticable and ineffective is the scheme that one might waver its adoption.

Perhaps, however, I am anticipating worries, for may not the totally enclosed subterranean age be on us quicker than appears likely, hustled in by Huns, the Stage and the Caterers?

This under-earth or mole period would have certain economical compensations, e.g., the all-season wardrobe possible by the equable temperature of underground cities, and the disappearance from public life of that crude feminine weapon often mis-named umbrella and chiefly lost, found, or exchanged by those addicted to it.

* * *

Once upon a time a very wise man, smelling the way the wind would blow, acquired a supply of a *dernier-cri* carburetter, guaranteed to run on air if washed out occasionally with spirit, and is going to reap a hundred fold—on the postal expenses of the deal, let us say. Among their other virtues for rejuvenating middle-aged engines the instruments are as good as gold, so quickly convertible into that metal. Not, of course, into real glittering yellow gold; that is merely a *façon-de-parler* now that *chez* one of the Greater Powers are current 5d. Treasury notes. This latter term does not appear likely to supplant the old word for poetic purposes yet. "On straw and in time most fruits will ripen," so "a soul or heart like a new T. note" may still become a stock phrase among novelists and the like.

Just to get the hang of business methods in the purified ages predicted after the war could not the big tyre firms begin by renouncing from buying out all the good patents aiming at abolishing pneumatics and punctures?

My excuse for all the above in an aviation journal is that 97 per cent. of those interested in that science still make tracks on the road.—T. S. HARVEY.

THE OVERSEAS FLOTILLA.

The aeroplane "River Plate" presented to the Government by the British Society in the Argentine was named on a recent Saturday by Mrs. Gilboade Pruden, wife of the chairman of the Society. The Earl of Meath and Sir Philip Hutchins were present on the part of the League of the Empire, which represents the Society in England. Contributions from the British residents in the Argentine, including gifts in money and kind, amount to £65,000. The gift of a second aeroplane was telegraphed recently to the League of the Empire for acceptance by the Government.

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FROM DENMARK.

The following notes from THE AEROPLANE'S Danish correspondent are published without emendation or alteration:—

Casualties amongst German pilots include recently names of renown in aerial circles; the fatal accident to Reiterer is reported elsewhere, and according to private information received here in Copenhagen, Bruno Langer, whose name appears in the casualty list of 20th October as missing Sub-Officer, has been killed on active service on the Eastern theatre of war against Russia. This pilot will be remembered as a recordman early in 1914 on the Luftfahrzeug-Roland arrow biplane, his flights of 14 hours and 16 hours sweeping out Fourny's two years' old duration record of 13 hours and starting the German record avalanche, not stopping till Boehm's 24 hours' flight. Later Langer entered, as Kühne too, into companionship with Helmuth Hirth, who entertained three Albatros biplanes for their entering the chief events of the year.

* * *

The last name in the casualty list of 6th October is that of one of Germany's oldest and most experienced pilots, Engineer Suvelack. Having taken his ticket in 1910 on a Schulze-Herford monoplane, he entered next year the Rumpler Works as pilot of their Taube, on which he put up the passenger-duration record of 4 hours 23 mins. at Johannisthal on 8th December, 1914. Later he flew the Aviatik monoplane, race type, till he formed the Kondor Aircraft Co., Ltd., at the Gelsenkirchen aerodrome by Essen-Ruhr, being its manager and technical director. The recent recorded altitude record with four passengers to 3,280 metres was performed by Höndorf on a Kondor biplane. Suvelack undertook himself many daring flights on his own-designed monoplanes and biplanes, his keenest one on a former being his effort of a direct flight from Essen across Holland and the North Sea to London. While out at sea he ran into a dense mist, and when diving found himself but few metres above the water surface, turning then back and just reaching the Dutch coast after a three hours' flight with petrol left for but few minutes' continuation, and could such make a tale of the importance of engine reliability.

The evening before meeting his death, Suvelack celebrated with fellows the anniversary of his entering the army, first as civil aviator on army service, later as military pilot. In active service he flew a L.V.G. biplane, had been awarded the Iron Cross and other Orders and promoted to Gefreiter for his successful flights. On his last flight he was returning to his home base, when he was suddenly attacked by an English battleplane; in the following aerial fight he was fatally hit by an English bullet.

* * *

Baron von Gienanth is another well-known civil pilot killed on active service. Having obtained his certificate at the Halberstadt aerodrome on a Bristol biplane in 1913, he was instructor by the Bristol Aircraft Works (now Halberstadter Aircraft Works) for a long time, turning out a number of able officer pilots.

* * *

The Flight-Lieutenant Helmuth Culin, killed on 27th July in accident with his burning aeroplane, is reported to have been the pilot who had up to his end carried out the highest number of flights on active service, many amongst them most daring, so that he had before his death been proposed for the Iron Cross, 1st class.

* * *

At the Padendorf aerodrome by Wieselburger Komitat a Hungarian pilot had risen to an altitude of 3,000 feet with his observator when the aeroplane dived suddenly 1,800 ft. to 2,400 ft., till the pilot seemed to recover the mastery of the machine. But from the nervous shock the aviator was hit by a fit of apoplexy, the aeroplane crashed to ground and both he and the observator were killed instantly.

The editorial matters in "Flugsport" of 6th October are finished by this remark of the editor: "During the printing of this issue six pages of copy and ten drawings were expunged by the censor. By their criticism of to-day's issue we ask our readers to take this into consideration. The next issue of 'Flugsport' shall get of usual size, and we will always endeavour to offer our readers the newest and most diversified copy."

* * *

A page of short news conveying much information a very distinctive way:—According to "Hamburger Fremdenblatt" of 24th October, Prince Henry of Prussia stayed the foregoing Sunday in the Hanse town, witnessing the flying exhibitions given at the Gross-Borstel race ground by the military flying school from the Fuhlsbüttel aerodrome, in aid of the "Red Cross" and of the "Hamburg War Help." [A pleasing contrast to the English rule of cutting off military aviators from all contaminating contact with the mere public who pay their comparatively adequate wages.—Ed.]

* * *

Following the recent reports of the German aviator Reiterer's altitude world's records with three and four passengers, his death is now to be reported. An Austrian by nativity, he was German by activity, being first a pilot of the defunct "Sportflieger" Etrich Co., where in these busy days of the Hendon flying schools one odd record of his may interest in that he undertook one November day 108 ascends with his pupils, and later, following his firm into "The Hansa and Brandenburgische Aircraft Works," its chief pilot. Few particulars are available beyond that Reiterer was killed in a passenger flight, as was the passenger too, on the company's new tractor biplane.

* * *

The following extract from the September issue of the German "Motor" is of considerable interest:—

"It must probably be said that the French and English flight departments were at the beginning of the war in single cases superior to ours—not through the quality of the aeroplanes, not through the adroitness of their aviators, nor even through a profounder or clearer apprehension of the tasks of aviation in the war, but simply by a couple of fighting aeroplanes, mounted with machine-guns, against which we could at first bring out no similar crafts. But through the building of still stronger aeroplanes this lack has got remedied too."

* * *

According to a photograph in the same paper, the whole of the crew of the Parseval airship, "P.L. 25," which is commanded by Germany's best Parseval aeronaut, Captain Stelling, has received the Iron Cross for successful patrol flights over the North Sea.

* * *

Now serving as an army aviator, the well-known German race-horseman, Count Walter Konigsmark, met recently with a fatal accident on a trial flight from Hanover to Hamburg, his brother, Count Fritz Konigsmark, well known too as a race-horseman, being killed the same day on the Eastern theatre of war.

* * *

From Jaffa, May 30th, 1915, "Flugsport" received the following letter:—An English mothership for aeroplanes appeared off Jaffa (Palestine) on Whit Sunday, the 23rd of May. Already in the second week of month March the mothership crossed for some days at the coast of Syria and had meanwhile likely been present by the Dardanelles. She launched a seaplane, a monoplane, which rose off a quiet sea after a short run and flew over Jaffa at a big circle, afterwards going into the country taking the direction to the railway line Nablus-Jerusalem, which had already twice been visited by hostile aviators, dropping two bombs on a military camp, without hitting, about 15 kilometres off Jaffa. Being fired at with shrapnels by the artillery, the aeroplane retired.

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DEAR SIRs.—Referring to our telephone conversation with you this morning. You fitted to our 12-h.p. "Rover" Car, invoice, May 5th, 1914, No. 1174, reference No. 1881, a "triplex" glass screen with speaking hole. As mentioned to you by the Writer he was driving along last week in the Car, when the screen was struck by a bullet; where it came from we have been unable to trace. You will see when you get back the screen that it has been the means of saving his life, as there is no doubt that any ordinary glass would not have stopped the bullet, and from the position in which it entered the screen it must have struck him in the head. Will you be kind enough to get ready another screen to be fitted to the Car in the course of about a week when we send it over to your Works. The Car is at present away in the country, and will not be back before the end of next week, but, to save time, will you make it to exactly the same dimensions as the last, the only exception being that the speaking hole is to be 1 inch longer in the direction of the right-hand side of the Car. We regret to hear that you are unable to supply the same thickness of glass, and if you still find it quite impossible to do this, we must take the $\frac{1}{4}$ -inch, but we only hope that if another bullet should come along it will be equally well stopped by the $\frac{1}{4}$ -inch glass as it was by the $\frac{3}{16}$ -inch.

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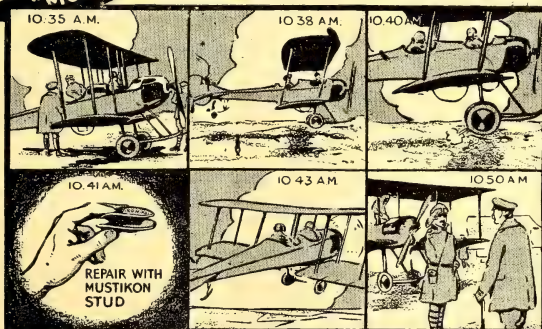
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"LES ACCIDENTS L'AVIATION."

A book which was published some little time before the outbreak of war is worthy of the attention of designers, constructors, pilots, and of those in authority who ordain what machines shall be flown. This is "Les Accidents d'Aviation" (Etude générale de leurs causes. Recherche des moyens propres à en diminuer la fréquence), by M. Alex. Dumas, an engineer whose opinion carries weight in France.

The book comprises a series of analyses of representative accidents of which sufficient is known to pass judgment, and the criticisms passed are considerably more courageous than is characteristic of the French Press. The causes of these accidents are divided into sections as follows. The percentages refer to the proportion of accidents due to the respective causes:—

- (1) Lack of structural strength, 35 per cent.
- (2) Error in design or in details, 20 per cent.
- (3) Carelessness of the pilot or his assistants, 10 per cent.
- (4) Lack of skill in flying, 15 per cent.
- (5) Acrobatic performances, 15 per cent.
- (6) Inclement atmospheric conditions, 5 per cent.

Consideration is given to accidents caused through wing breakage, failure of load wires, propeller breakage, engine failure, chassis collapse, breakage of controls, faulty repairs, and physical weakness on the part of the pilot.

Many of the faults of which warning is given do not occur in modern machines, and some of the conclusions arrived at may not be entirely justifiable; but the writer has honestly endeavoured to place on record the shortcomings of the past in the hopes that the lesson will be learned in the future.

The criticism is not merely destructive. At the end of each chapter are very sound suggestions as to measures which may remove or mitigate the dangers reviewed. The book is well printed and illustrated, but vilely bound, after the manner of the French press, and can be obtained through William Dawson and Sons, Ltd., Rolls House, Brems Buildings, E.C.

GOLD COAST.

The Government of the Gold Coast has received a further contribution of £1,500 for the purchase of an aeroplane to be presented to the Royal Flying Corps. This sum has been given by the Omaniene and people of the division of Akim Abuakwa, in addition to many other generous contributions to various funds.

A DRIFT ESTIMATOR.

One of the cleverest attempts yet made to solve the problem of drift estimation is that of the Sperry Gyroscope Co., of Brooklyn, N.Y. This instrument consists of a prismatic monocular telescope, which is so made that it is always in focus, and it is mounted so that a clear view of the ground beneath the machine may be obtained. When looking through the telescope, five fine parallel hairs are seen across the field of vision.

On account of the speed of the aeroplane over the ground every object seen through the telescope passes across the field of view so quickly that it looks like a line. A pointer secured to the telescope makes it possible to read on a graduated scale the angle between the actual course taken by the aeroplane and the course indicated by the compass (and the nose of the machine). A steel wire passing through flexible tubes connects the telescope with the adjustable lubber line of the compass in the pilot's cockpit, so that it is never necessary to read the pointer of the telescope, except to check the accuracy of the lubber line.

Thus, by keeping his machine heading on to the lubber line, which is constantly adjusted by the passenger to compensate for the change in drift, the pilot can always hold the machine on to the desired course. The scheme seems a very sound one, and worthy of further investigation.

ABOUT PLUGS.

No new industry for this country is the manufacture of sparking plugs, but the production of plugs suitable for modern aeroplane engines is a problem calculated to tax the skill of the most ingenious. Every ounce of efficiency is extracted from the engine, and plugs are not only expected to improve correspondingly to every engine improvement, but to set the pace by functioning with unhesitating precision at all heats and all speeds.

Those of us who were motorists ten years ago will have memories of plug troubles which in those days were regular and expected incidents of the pastime. Of later years such trouble (on cars, at least) has almost disappeared. As far as concerns aviation—ingenious as original engine designers were—the plug problem was too much for them, the severe conditions outmatching all the then known constructional devices. Fast as engines have been improved, plugs have improved equally fast.

It is a modern truism that the pinnacle of efficiency is only to be attained by the specialist, and this is essentially true of sparking plugs. Only those firms who for



A MEMORY OF PEACE.—Mr. George Lusted, now a Sergeant, R.F.C., and the "Daily Mail" Avro (80-h.p. Gnôme) which he flew on his exhibition tour.

years have made a study of plug manufacture will now, and in the future (as aviation comes into its own), hold the confidence of the public, for the production of a satisfactory sparking plug offers problems in practice which no theorist in the world can solve. The acid test of experience will quickly dissolve the bad from the good.

The modern plug must be accurately made, and strong; it must have an insulator which will not crack or melt under a working temperature equalled only by a high-pressure blow-pipe or an electric arc, and, withal, it must convey its spark and place it in position with a rapidity and regularity infinitely faster than thought.

One of the most satisfactory varieties of plugs known for aeroplane engines, where heat is the most important factor, is to be found in those many districts "Somewhere in —" where R.F.C. engines are humming about. This plug is made by the Sphinx Co., of Birmingham, but inquiry from the makers only elicits the Sphinx-like response that in the public interest constructional details must for the present be withheld, as this "super-plug" is at present (and will be, apparently, for the duration of the war) only available for Government purposes. It is hoped that readers may be given further particulars concerning it some time in the near future.

STEEL STRANDS.

The firm of George Craddock & Company, Ltd., of Wakefield, has been noted for some time for exceptionally high-class steel wire strands and cords for aircraft, the manufacture of which they have made, and continue to make, a special study.

Steel cables for aeroplanes and airships must of necessity be of the highest possible quality, combining the greatest possible tensile strength with ductility and toughness, and Craddock's specialities are notable for these properties.

The strands and cords are made of the best tinned steel wire to Admiralty and R.A.F. specifications, and considerable contracts are executed for foreign Powers.

The firm will be pleased to entertain further enquiries, and constructors may find useful information on the subject of wire bracing in general in a pamphlet which they have just issued. It will be sent to any responsible person who may apply, mentioning THE AEROPLANE.

A TIP TO SERVICE MOTORISTS.

So many officers of both Services drive cars of their own of weird types with odd size wheels that they may be glad to know where they can generally get bargains in types of the sizes they want. Mr. W. A. Dunn, of 23, Shaftesbury Avenue, keeps a large stock of odd sizes, both new and second-hand, and he generally has also some special lot of clearance or job-lot tyres of standard sizes which he can sell cheap. The writer has dealt with

Mr. Dunn for several years, and has never been "let down" by taking his advice about tyres, so it seems fair to let others know where bargains can be had. The shop is easy to find, for if one drives straight up Shaftesbury Avenue past the Palace Theatre, up the next stretch beyond Cambridge Circus, and happens to be going too fast to take the bend towards Holborn, one runs into it.—C. G. G.

HENDON NOTES.

[The representative of THE AEROPLANE states that owing to the inclement weather he could persuade none of his literary friends to visit Hendon last week-end on his behalf, and he was therefore compelled to go himself.—Ed.]

Last Saturday was a bitterly cold day. Only a stern sense of duty, backed up by the knowledge that there was no wind and some probability of flying, made me decide to go to Hendon. When I got there the sky seemed filled with aircraft of every kind except Taubes. Every school machine was busily engaged, and in addition one saw a de Havilland, an R.E., a Bristol biplane, and—most interesting of all—a twin-engined Caudron of the type which has done so well in France. There were quite twenty-five machines in use altogether, and so many were up at the same time that Hendon habitués stood around Pylon No. 1 and simply laughed at the unaccustomed sight.

How the machines avoided colliding with one another was something to marvel at. In fact, just as dusk came on there was a collision of an alarming nature. A pupil who was completing his brevet tests unfortunately continued his *vol plané* longer than was actually necessary. His Caudron collided with the earth and turned a complete somersault, and the last state of that machine was much worse than the first, but the pupil escaped injury, as is almost always the case with Caudron pupils.

On Sunday afternoon I went back to Hendon to see if by any chance it was colder than on Saturday. On the whole I think it was. Curiously enough, there were many visitors, and a great many passenger flights were taken and paid for, if not enjoyed. The enthusiasm which prompts a man to pay for a flight in a temperature many degrees below comfort-point deserves honourable mention.

To record the names of the various pilots would be of comparatively small interest to readers, and the catalogue may be found in back numbers of THE AEROPLANE, for all the well-known pilots were out. It may safely be asserted that there were no slackers.

A good deal of interest has been aroused recently by the extensive building operations proceeding at the aerodrome. One large structure which, according to rumour, was destined for the accommodation of an Anglo-Zeppelin, now turns out to be a new Y.M.C.A. shelter. It is encouraging to learn that the comfort of the Christian Young Men of Hendon is not being overlooked.—D. W. T.

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ZEPPELIN BOMBS.

Professor Leonard Hill, in a lecture on "Gas Poisoning" before the Medical Society of London on November 29th, said that, 'owing to the enormous ventilating power of the atmosphere, there is no reason to fear that the Zeppelins will drop poison bombs on London.'

"The scare about poison bombs which was prevalent in London some months back was unreasonable, and the sale of respirators, constructed as they were to be worse than useless in a real emergency, was nothing more than a gigantic fraud, against which the public ought to have been warned."

SCHOOL AND WEATHER REPORTS.

WEATHER.—Freezing and some snow. Calm on Saturday and Sunday.

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Prob. Flight Sub-Lieuts. Aird, Aitken, Burden, Armitage, Horniman, Rampling, and Pritchard.

Pupils doing circuits and eights with Instr.: Prob. Flight Sub-Lieuts. Malet, Moody, Owens, and Saint.

Certificates were taken during the week by Prob. Flight Sub-Lieuts. Aplin and Davenport.

Machines in use: Grahame-White biplanes.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instructor: Messrs. Gammon, Malet, Howe, Hughes, Leigh, Hathaway, Henshaw, and Yates.

Pupil doing half-circuits with Instr.: Mr. Philippi.

Pupil doing figures of eight or circuits alone: Mr. Horridge.

Certificate was taken during the week by Mr. Horridge.

Machines in use: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, C. Jacques, H. Sykes, and W. T. Warren, jun.

Pupils doing straights or rolling alone: Messrs. Dawson, Loomes, Scott, Roberts, Egelstaff, Atkinson, Heyn, Thorpe, Martin, Jowett, Woods, and Knowles.

Pupils doing figures of eight or circuits alone: Messrs. Burgess, Braim, and Lewis.

Certificates were taken during the week by Mr. Rupert N. Braim and Lieut. Lewis.

Machines in use: 4 L and P. biplanes.

AT THE BEATTY SCHOOL OF FLYING.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell and L. L. King.

Pupils out during the week: Messrs. Baldwin, Barnes, Barrow, Begg, Bond, Brynildsen, Byrne, Collett, Cumming, Davison, Edwards, Gayner, Hodgson, Jones, Kirkwood, Murdoch, Nicholson, Ontey, Overton, Owen, Podmore, Richard, Samter, Schollaert, Smith, Whincup, Willmet, Godfrey, Williams, Paterson, Drysdale, Martin and Capt. Summers.

Certificates were taken during the week by Capt. Summers and Messrs. Bond and Paterson on Beatty-Wright machines, and Mr. Nicholson on a Caudron machine.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

Exhibition flights were given on Saturday by Messrs. Beatty, Kenworthy and Virgilio, and on Sunday by Mr. Virgilio, and 6 passenger flights were taken.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Ed. Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with Instructor: Messrs. Vernon, Cuthbertson, Bolton, Launoit, Tomson, Laidlaw, Cox, Pauli, Hamtiaux, Dobson and Winter.

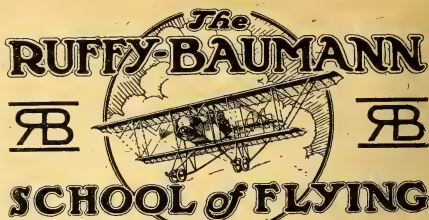
Pupils doing straights or rolling alone: Messrs. Cole, De Grauw, Coppens, Griffith, Tomson and Sherwood.

Pupils doing figures of eight or circuits alone: Messrs. Liddell and Sherwood accomplished excellent flights.

Mr. H. J. Liddell finished his certificate tests, making an exceptionally good glide from altitude of a thousand feet.

Machines in use: Three Caudron type (60 h.p. and 50 h.p.) tractor biplanes.

A large amount of constructional work has been put in this week as another machine is being rapidly erected and will soon be completed.



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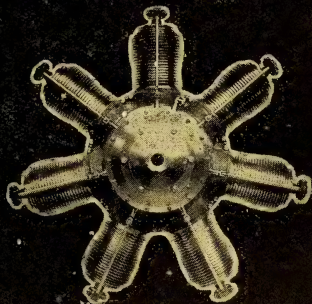
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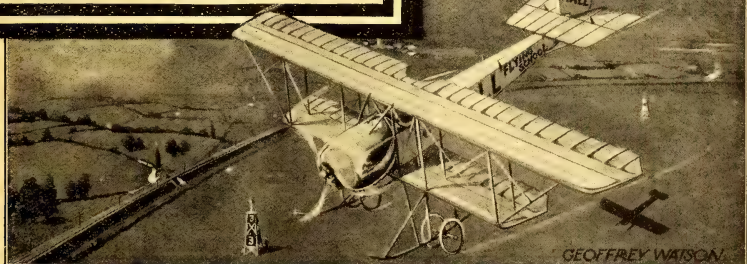
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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

Did I ever, by way of these interludes, propose you that entertaining, if inconclusive riddle: "Why is a mouse when it spins?" If not, I do so now without a word of apology, as it happens to be precisely the apparent riddle of the Rhone valve-gear. And—much as I favour the study of comparative anatomy as a preliminary arts course to these higher branches of engineering as represented by aeromotors—you need not borrow anybody's mouse to enable you to solve the problem. Just take a ring—bracelet or bangle-size—and twirl it on your forefinger; when you will begin to see it, noticing a distinct cam-action relatively to the axis of the said digit. But, you will say, how do you start the motion mechanically? since you cannot suddenly drop and lift a shaft—on which any kind of cam would naturally be mounted—as you do your finger, to start the ring spinning round it. Of course not. Well, but have you yet noticed exactly how the ring happens to twirl? Did you remark the obscure-obvious fact that it does so, essentially, because it binds on your finger as it touches, not by friction but "sticktion"? Very well, then: suppose your finger had a circle of stationary teeth on it, and the ring a set of internal teeth to match, would not the mechanical result be exactly the same, merely a little more obvious and with less surface-slip, solely because of the presence of those intermeshing teeth? Quite so: you have thus got half the story of the Rhone cam and valve-gear action.

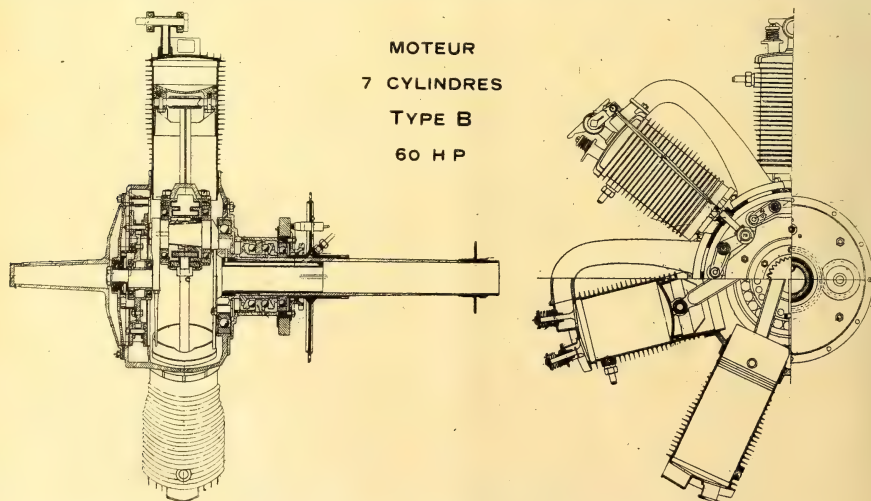
THE MECHANICAL ESSENTIALS.

But now look beyond the end of your finger. And imagine the near side of the ring towards you, extended, say, a couple of inches. Noticing at the same time the path of the ring, you will see that anything it contained—in the Euclidean sense—such as a ball-race, would still be eccentric to the same degree to the axis of your finger. Therefore, that the said ball-race might as well be there as not, for any difference it could make to the motion of the ring. Which being so, it will be clear that the ball-race might as well enclose a shaft—or at least an eccentrically-cut portion of a shaft, corresponding with the rotary-motion path of the ball-race—without which indeed the latter would be superfluous. Also you will see that it

would not matter so far, whether this shaft and its eccentric portion happened to rotate or not. It doesn't in this case, quite by the way. Very well, you have nearly all the story. But you will see that if this imaginary endwise extension of the ring had any upward, disc-like extensions, the edges of which had to do any work, that ball-race and enclosed shaft would be very necessary indeed, if the original motion imparted by the teeth were to be maintained in the same eccentric path, relatively to the finger axis. Which is precisely the working condition of the Rhone cam-and-valve-gear device. Imagine, then, your entire hand as the crank of the motor; and in place of your finger-tip, a little extension carrying a stationary pinion fast upon it, with a ball-bearing over the boss or sleeve of the pinion for the frontplate of the crank-chamber to run upon, the whole of this part absolutely axial to the shaft-centre. And then imagine between your hand and finger tip, an eccentric portion—on your finger, as it were—and upon that eccentric portion a double ball-race enclosed by the boss of a disc. Also that the said disc was extended upwards into two cam-plates, bolted to its edge; and endwise—towards your finger-tip, so to say—into a drum, with an internally-toothed ring, extending over and meshing with the stationary pinion. Then you have the entire constructional story of the device.

HOW AND WHY THEY WORK.

As to the motion, you will see that no matter whether the pinion and shaft rotated to initiate the motion of the internally-toothed ring—and with it all parts thereto attached, such as the disc and its cam-plates—or whether, as is actually the case, the front plate of the motor crank-chamber, as it rotates, sets the disc rotating by means of a connecting stud, the motion of the aforesaid disc is bound to be eccentric to the pinion and the finger-tip shaft-extension. But as the crank-chamber itself—and with it the radial series of cylinders—are naturally *concentric* to the pinion, it follows that the disc-motion is eccentric to their rotation. Hence its cam-action relatively thereto. And since the number of teeth in its internally-toothed ring is just twice that of the teeth on



Part Sectional Diagram of the 7-Cylinder 60-h.p. Le Rhône.

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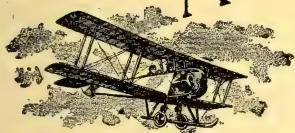
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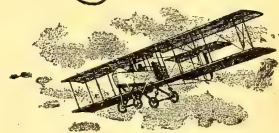
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the pinion, while it is otherwise perfectly free to rotate on its double-ball-race, it follows that its rotation speed is exactly half that of the crank-chamber and its cylinders. Thus, you have the cam-action ready-made—in the due four-stroke cycle—for any valves those cylinders possess. Assume, then—as one may, indeed—the edges of those cam-plates to be appropriately cut, with their ramps in the proper relative position—those on the inner plate for the inlet and those on the outer one for the exhaust—and a single toggle pivoted in the crank-chamber wall, and having a roller at each end, set between each pair of cam-ramps—seven or nine as the case may be—it follows, does it not, that a single tappet rod attached to each toggle, if attached at its upper end to a bell-crank rocking lever with two free ends, will suffice to operate both valves while those ends touch; pulling down to open the inlet and pushing up to open the exhaust, as its toggle is oscillated by the rotation of the cam-plate ramps? Add to this that the length of each tappet rod is easily adjustable to a nicety by simply twisting it half a turn in its tapped socket, then re-attaching it by its eye-loop to the stud on the crank-arm of the rocking-lever above, and finally securing it with the tiny piston ring which is fitted in a groove in that stud, and we have the entire scheme and story of the Rhone valve-gearing.

CERTAIN SPECIAL ADVANTAGES.

It only remains to admit that it is the prettiest and simplest, mechanically, of any rotary motor valve-motion device dealt with so far. Also the most efficient, for not only is there nothing that can possibly get out of order in its make up, but the extensive peripheral surface of the cam-plates alone ensures the minimum of wear; quite apart from the fairly-evident fact that their long, gradual eccentric motion—alone among four-stroke motor valve-gears, one might say—takes away all the snap and jar of the ordinary drop from a cam-ramp, which so deteriorates the metal of tappet rods, and leads to their elongation or sudden fracture. Last, and best of all—since the mechanic is the lowest common denominator of all motor-propositions—it will be seen that the entire scheme of the device works out so that there are no internal adjustments to be made. Taking down or reassembling, everything simply slams in, one after the other in its due order: and it must go into the right place, for it cannot possibly go into any other. So there is no need of any delicate oscillation or other gingering of the motor to bring any satellites into the correct tooth relation to the mother-planet, in order to get the valve-action properly timed: for there are none. Merely getting the tappet-rod adjustment right according to the book—best done by never touching it when the motor comes down—is the sole consideration; so the entire job, apart from timing the ignition—also a straightforward affair—should be well within the ability of even an A.S.C. recruit, as commonly accepted in these times, provided that he has been duly told that he knows nothing about anything more mechanical than a turnip-cutter, and is then shown how and made to learn the very simple anatomy of the Rhone. All of which, consequently, makes it such a peculiarly suitable one for military use, with its eternal element of "edge-fakin'," as they say in Yorkshire.

SOME OTHER EXTERNALS.

Most of the rest of the design is shown in the pictures, clearly enough; and from these it will be seen, I think, that the after part comes out just as simply as the front, mechanically. There is, first of all, the huge main ball-race of the crank-chamber, the inner ring of which, it will be found, is set fast by large grub-screws through the third, sixth, and ninth holes of the series that skeletonise and lighten the crank-web on that side. Aft of this again comes the main carrying sleeve-bearing of the motor, supported internally by, and running upon, its double thrust ball-bearing; and again, behind this, upon a plain ball-

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bearing; immediately outside the housing of which, over the end of the sleeve, the thick-fibre disc of the ignition plate is mounted. But right at the end of the sleeve—as it were to close up everything—a circular web-plate is bolted, on which lies a drumlike rear extension, formed into a toothed sun-gear. This gear, of course, rotates at the same speed as the motor, and meshes up with a stationary planetary gear mounted on either side; one for the magneto and the other for the oil-pump; and finally, behind everything else, we find, mounted on its sleeve-like boss, fast to the hollow main-shaft, the stationary ignition plate with its single fusee-plug transmitting the h.e. current to the contracts on the fibre disc as they revolve past it. And so on; much in the characteristic essential make-up of this part of any rotary motor.

THE RHONE LUBRICATION SYSTEM.

The lubrication arrangements, however, are exceptional in this case. For instead of depending, as most rotaries do, on the wasteful plug-fouling *carbottage* system, the main entry is inserted through the angle of the stationary ignition plate and its sleeve, through the barrel of the shaft, and into a short conduit which carries the oil as far as the after crank-web. Then, turning upwards to a large hollow bored in the top of this—immediately below the main crank-chamber ball-race—it goes towards the hollow crank pin; where, at this point, part of it drops into a quill-like drip-feed pipe. The rest of it goes on, through the hollow of the crank-pin, and then into a lead drilled vertically through the length of the forward crank-web, into the bottom of which is screwed a second shorter quill-like drip-feed pipe, which, like the other, serves mainly for cylinder lubrication. The remainder passes on into the hollow of the journal—the eccentric portion of the shaft—and through holes in this last, thoroughly lubricates the whole of the rotating cam disc with its bearings as well as the rest of the valve-gear mechanism; the conduit system being finally closed by the covering nut in the small “finger-tip” extension of the crank-shaft. And when it has been said that the pump itself is a kind of crank-and-paddle device that pulsates the oil through as its spindle rotates, one practically completes the mechanical make-up of the Rhone;

for the induction, as might be expected, is effected in the ordinary way of rotaries, through the hollow barrel of the crank-shaft; but—thanks to the special lubrication conduit-system—not anywhere brought into contact with the lubricant.

(To be continued.)

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WEDNESDAY, DECEMBER 8, 1915

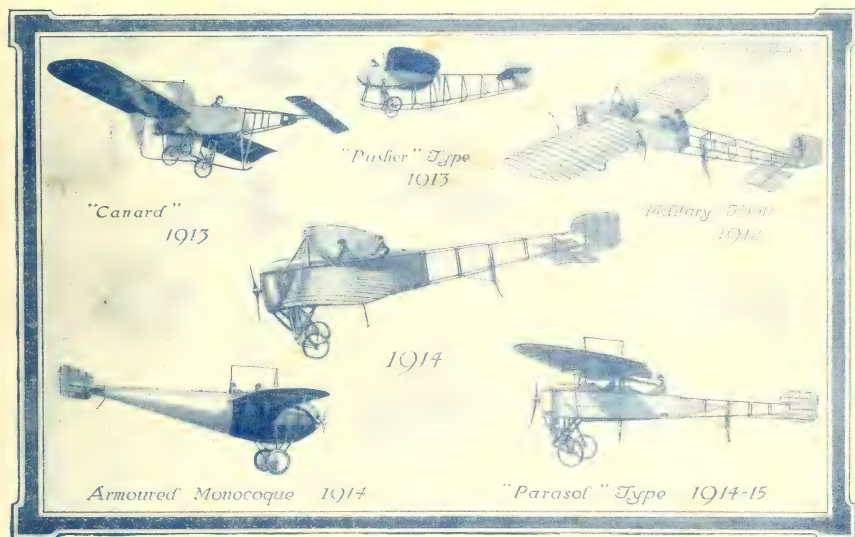
Edited by C. C. GREG

Vol. IX. No. 23

ONE PENNY WEEKLY

[Registered at the G.P.O.
as a Newspaper.]

MILESTONES—XI(C).



THE DEVELOPMENT OF THE BLERIOT:—In 1912 the tandem two-seater was produced and proved one of the best machines of its day. In 1913 came another "canard" which lived up to its name. Also a "pusher" monoplane was built in which the propeller revolved on the top tail boom. This machine came to an untimely end, along with the famous pilot, M. Perreyon. The 1912 "tandem" was developed in 1914 into the type shown in the centre of the picture, and almost simultaneously the "parasol" tandem was produced. This has proved of considerable use on service. In 1914 also M. Bleriot built a monoplane embodying a most valuable idea which has never been fully developed. The engine tanks and pilot were all inside an armoured casing. Behind them the fuselage was a "monocoque" of three-ply wood bolted onto the armour. And behind this all the tail surfaces were bolted on as a separate unit.

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ON AMERICA.

In these days it appears to be dangerous to write about British aeroplanes or aviation or aeronautics, so just for a change I propose to write about some other country. The "Globe's" fate rather prompts one to use the phrase attributed to the Bishop, apropos the Colonel's oburgation of the careless caddy—"Not but what the little beggar thoroughly deserved it," but having no desire to share the "Globe's" fate I submit the following :—

The other day I came across a curiosity, so far as this country is concerned, though I gather that it is a fairly frequent phenomenon in the more or less United States which exist on the west side of the Atlantic Ocean—perhaps you have heard of hyphenated Americans. This curiosity is an American citizen who takes more interest in the home politics of the United States than he does in our War. He pays us Europeans the compliment of admitting that it is "some war," but he is strongly of the opinion that when America does have a real war of its own it will make this amateur Armageddon of ours look like an Italian ice-cream vendor's stock alongside the chunk of cold that sunk the "Titanic"—you will note that the American language tends towards the picturesque.

Personally, I have always warned my readers that we in Europe do not have this war in the right perspective, and that it is quite a long way off being the real authentic Armageddon as per prophecies. We are too close to it to see its relation to humanity in general. True, it influences in one way or another most people on earth, but it is equally true—on the authority of Professor Lanchester, member of the Government Advisory Committee for Aeronautics—that when a flock of birds fly overhead they increase by their weight the atmospheric pressure on the people below them. Of course, everyone feels the influence of the war rather more than that, but the general idea is the same, and though probably every soul in America is influenced in some way by the war, the great majority of the American People do not really care much about what happens to Europe so long as it provides a good market for their products, agricultural or mechanical. But where this particular American surprised me most was in his belief that America is ever going to have a private war at all.

Most Americans whom one meets in England are more pro-Ally than the Allies themselves—*plus royaliste que le roi* as it were. The original American jest that "Americans are so neutral that they don't give a darn which country licks Germany" puts their sentiments far too mildly. They curse the Kaiser, and the Crown Prince, and Von Tirpitz more fluently—and naturally more picturesquely—than any London halfpenny paper. And President Wilson's anxiety not to debase his pride by joining in the scrap seems to make him about as popular with them as Von Tirpitz is because of his submarine campaign.

We may get a particular breed of American over here, or else Americans are unusually good actors, but most of our American visitors do not seem to comprehend the rather bored way in which the average Englishman of the better class regards the war, for the American waxes frantic with wrath over regrettable incidents which the Englishman accepts philosophically as part of the penalty one pays for enduring Coalition or any other government. What is still more difficult for the intensitised American to understand is the slackness of our working classes, and the hopeless lack of organisation in public departments into which he bumps in his praiseworthy efforts to do business for the good of the Allies and his own pocket. I only hope the exposure of our lack of organisation in the American press may teach America how to avoid our worst fault of all. And having weighed us up in the balance and found us wanting, the intense American, in England at any rate, wants his country to come in and help us to run the War.

A QUESTION OF POLICY.

It does not seem to strike most of our trans-Atlantic visitors that it would not really pay the States to chip in with the Allies. In the first place, it would mean that all the profits America is now making out of supplying the Allies with arms, ammunition, aircraft, automobiles, canned beef, mules, submarines, music-hall artists, rag-time music, and other destructive material would be squandered in a few weeks on its own war expenses. America would have to vote so many millions of dollars for her contribution to the war, and that contribution would be taken out in goods rather than in men. All the commodities mentioned above would be bought by the United States Government, which would send them to Europe gratis and post free, and the United States Government might buy a trifle more shrewdly than does the simple-minded Frenchman or Britisher, so the profits to the individual vendor would be less, and the profits to the American nation nil.

Besides that, certain hot-blooded young Americans would want to join in the war personally, like the Franco-American Aviation Corps, with its slogan "To Hell with Neutrality." The American aviators in France are comparatively few in number, and so are more or less easy to keep under proper discipline, but fancy the effect of handing over a sector of the fighting line to a couple of American Army Corps. It is, I gather, quite a sufficient problem to handle Canadians, let alone free-born American citizens.

Of course, the American Fleet, being the third largest in the world, might come in useful some time or other, but at the moment it seems as if the Allies possess more fighting ships than they actually want. America might, as a war contribution, supply the Allies with free freightage in American merchant ships, but that again would not be popular among American

business men, or among English shipowners who are making war profits of quite satisfactory size.

On the whole, then, one can quite understand that America has nothing much to gain by coming in on this war, and has a whole lot to gain by staying out and making all the profit she can out of supplying armament, so as to lay up money for her own war and to put her armament firms on a sound financial footing.

A friend of mine from Japan tells me that the Japanese, having seemingly finished their active participation in the war with the seizure of that port which the Germans had previously stolen from China, have been turning out enormous quantities of arms and ammunition for the Allies, but apparently it is practically all being done in Government arsenals and not in private factories, so that when Japan comes to have a private war of her own she will be thoroughly well equipped for it. Possibly this method may commend itself also to the acute American intelligence, if American business interests are not too strong to prevent State ownership of armament production.

A FINANCIAL PROBLEM.

Of course the drawback to the purchase of armament in America is that at the finish the Allies will owe America more money than can be paid off in years of taxation. However, let us hope that some acute British business men have spotted a way of getting some of it back. It may be too late now, but one way which was possible some months ago seems to have a good deal to recommend it. Suppose, purely for example, someone "in the know" learned that big Government contracts were to be placed with certain American firms and proceeded to purchase big blocks of stock in say—to invent purely fictitious names—the Back River Ship Company or the Judea Steel Works. Suppose he put £20,000 into Judea Steel Common at 30, knowing that the American public would start gambling in "Armaments" as soon as it became known that the orders had been placed. And suppose he unloaded when Judea Steel had been rushed up to 300—for some American shares have jumped as much in the present year. His £20,000 would then be worth £200,000, and he would have made close on £180,000, after deducting brokerage and so forth. And all that would have been made out of American speculators.

If the idea had struck anybody soon enough it might have been worth while to start a regular Government Gambling Department in the various Capitals of the Allies, which, by acting on inside information, might have got back out of the unsuspecting American speculator all the war-profits made by American manufacturers. I am afraid, however, that such an eminently practical notion would scarcely have recommended itself to such monuments of integrity as the members of the British Cabinet.

AMERICA'S FLYING SERVICES.

However, I seem to be getting rather wide of my patriotic American, and also of the subject of aircraft, on which I am generally supposed to write.

Perhaps the most interesting information received from my American friend was that the American nation has resolved to treat itself to a real Army and a real Navy. I believe something has appeared in even the European papers about the Navy Vote in the United States Senate—I think it was the Senate, but it may have been Congress—but the note on the subject, like all really interesting matter, was snowed under in the English papers by inaccurate news of the war and rude remarks about the Censor, so I must have missed it. However, I am told that the United States Naval Department has had more money voted for it this year than the British Navy has ever had in time of peace.

The United States Navy is already the third largest

in the world, and now it looks rather as if it intended to be the largest of all. Which, in view of the size and population of the United States, seems a laudable ambition, especially as after this war some thousands of European sailors—not to mention soldiers—who are discharged on demobilisation, are likely to go to America to get quit of European mess and muddle and in the hopes of finding efficiency in America—where they may, with advantage to all concerned, be tempted into the United States Navy.

Now, we have learned from this war, so far as it has progressed up to date, that adequate flying services are required both by the Navy and the Army, not merely as scouts but as actual forces of offence and defence. We in Europe have had to find out the uses of aircraft at great trouble and expense. America, on the other hand, has been in the happy position of being able to "wait and see," in the manner recommended by Mr. Asquith. We have waited too long and have seen some of our mistakes costing us dear. America can start with a clean sheet and build up her flying services on a proper basis, if only the Military and Naval Authorities can keep them clear of political and commercial graft.

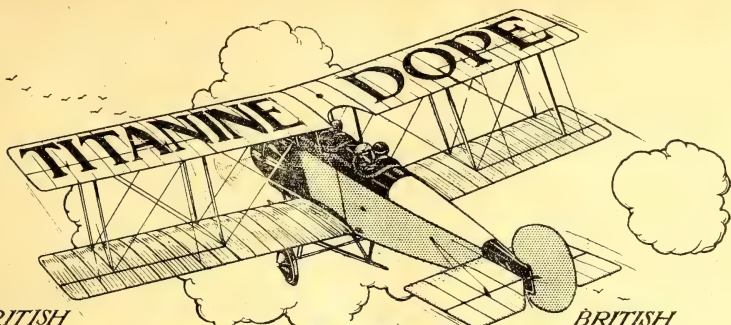
THE FIRST THING TO FIX.

The first thing America ought to lay down as a fixed principle is that the Military and Naval Aviation Departments are merely adjuncts to the Army and Navy. I put them in this order because I understand that, as in all countries except England, the Army is the Senior Service. The American Government should get right away from the notion still prevalent in England that it is possible to build up a separate Air Service, distinct from Army or Navy, but intended to operate with both or either.

Those who advocate a Third Service lose sight of two most important facts. Firstly, it takes a couple of months to make an aviator, whereas it takes years to make a soldier or a sailor who is fit to be anything except cannon-fodder. Secondly, an aeroplane is merely a vehicle for the convenient transport of soldiers or sailors, it is not a thing apart, and it is easier to fly an aeroplane than it is to drive a motor-car at the same speed.

The only reasonable reason I have ever struck for the formation of a separate Air Service was given by Dr. Arthur Lynch, M.P., who remarked in the House of Commons that if a Ministry of the Air was created to control an Air Service, the Air Minister, being a new official, would boost his Department into prominence and get things done which could not be done by a sub-department of an older Ministry. A thoroughly Irish argument that. Do the wrong thing so as to get something done quickly and with as little trouble as possible. It might work in time of war just to hustle things, but if the aeronautical branches of the Services are to do their jobs properly all that work would have to be undone when the time came to put military and naval aviators in their proper places.

The main point to remember is that a military aviator is merely a soldier in the air, whether he is the pilot or the passenger in an aeroplane. If he has not had a soldier's training he cannot read maps properly and he cannot recognise the formation or number of the troops below him. He cannot tell whether they are infantry or dismounted cavalry, guns or transport or ammunition columns. He cannot form an opinion of whence or whither they are moving. Also he cannot "spot" for artillery fire without proper co-operative training with artillery. Without special training he cannot drop bombs to the best military advantage. And, unless he is a soldier, it is quite possible that his personal conduct may not endear him to the other members of his mess.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISER

It is no argument to say that some civilian aviators have been more successful as air scouts and as fighting-men than some soldiers. That merely proves that some civilians are born soldiers—like General Ulysses Grant, for example—and that some soldiers would look better in a bonnet and shawl—I name no names and I make no insinuations, but most soldiers could fit the names of general officers to the said clothing-scheme.

Similarwise, a Naval aviator must be a sailor first and a flier afterwards if he is to be worth his keep. How can one expect a civilian with a few months' training, or a soldier with years of military training, to go out and make certain from the shape of its conning-tower whether a submarine is British or American or French, or even Swiss for that matter? And how could he tell an American battleship from an ex-American ship, bought by Greece, captured by some other nation, hired to another, and used against his Navy? And how could he be expected to handle a big seaplane in a rough sea when coming alongside an aeroplane mother ship and when getting her aboard? It would take an aviator years to learn to navigate in a proper seamanlike fashion when out of sight of land, whereas a military aviator can always steer by his maps.

So you see that even if any nation is ever fool enough to set up a Third Service, that Service will have to be separated into two very distinct parts, each composed entirely of soldiers and sailors respectively and subordinate to the orders of the Military and Naval Authorities in each case. Therefore, if complications are to be avoided, it is absolutely essential that each of the two fighting Services should have its own aeronautical branch entirely separated from the other.

It will be well to keep the personnel of each flying service in fairly close touch with the other, so that each may exchange experiences and ideas with the other to their mutual benefit. A healthy spirit of emulation should be fostered. Competitions in public between Service aviators should be encouraged, as they tend to improve the breed of pilots and aeroplanes. The best competition fliers in Europe have turned out to be the best Military pilots, and if the British Naval and Military Authorities had encouraged competitions before the war, as the Germans did, they would have had bigger and better supplies of aeroplanes and pilots than they have to-day.

There should also be official channels for the communication of ideas between the Departments of Military and Naval Aeronautics—I believe they call them Bureaux in the States—so that reports from Service aviators on new machines and novel experiences may be circulated in both departments. This would avoid the state of affairs which I have come across in one European country, wherein a number of aviators in one branch of the Flying Services possessed full knowledge of a novel and interesting aeroplane belonging to another country for weeks before the people at the head of the other branch had even heard of its existence.

Instead of permitting petty jealousy between the branches of what may be nominally one Service, every effort should be made to arrive at a state of healthy rivalry and mutual assistance between two entirely distinct Services. Which is another reason why the sporting spirit should be fostered by public competition.

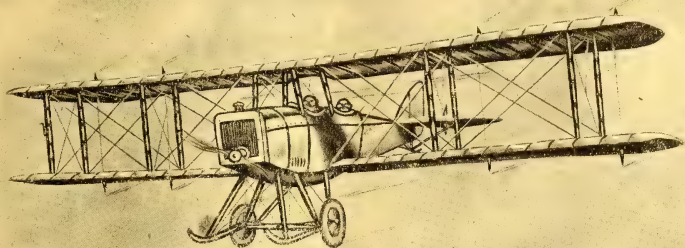
So far as Great Britain has been concerned in the past, before the war, this sporting spirit has been absolutely lacking. Public sport has been regarded as unbecoming to officers and gentleman, and so instead of working off their natural rivalry in a healthy open-air way the two so-called "Wings" of the Royal Flying Corps (Naval Wing and Military Wing, as they are still called in official papers), have been reduced to "doing one another down" in small and petty ways. One Wing despised the manners and customs of the other, and the other regarded the one as a set of snobs—and both were, to some extent justifiably, mistaken.

Manufacturers of aeroplanes suffered from this unofficial rivalry, for work in hand for one Wing would be pushed aside by representatives of the other Wing, and neither would be satisfied and the manufacturer was blamed. Material on order for one Wing would be practically stolen from the other Wing before leaving the manufacturers' hands, and even the representative of a foreign nation would be allowed to get hold of it just to "do" the other Wing. All this led to inefficiency, and now we have to pay for it in shortage of machines and lack of proper organisation. Let it be a lesson to America to start out from the very beginning with the idea that the Flying Services must be, now and always, two subordinate branches of the two great Fighting Services.

(To be continued.)



MISJUDGED.—A German biplane on the Eastern Front which failed to reach its landing ground. Doubtless, the pilot explained that he was dropped by an unsportsmanlike down-current which cramped his style.



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E.B.H. LANDER, 1915.

FAILED TO RETURN.

For the first time, so far as my memory holds good, Sir John French's official dispatch bearing date December 2nd, and reproduced in its proper place in the Military Notes this week, refers to certain aeroplanes which had been on reconnaissance and "failed to return." In a manner it is extraordinary that any notice should have been taken in a dispatch from G.H.Q. of such a very trivial incident. What, after all, are two or three, or at most four, flying officers and a couple of thousand pounds' worth of aeroplanes as compared with the losses of the rest of the Army? To us, who live for the sake of and by our concern with aviation, the incident is of great interest; but to the Army as a whole it is a triviality, and its mention in the dispatch seems liable to upset one's sense of proportion if one happens to be intimately connected with flying.

Why the loss of these two machines was mentioned at all seems extremely hard to explain, except as a courteous admission of the correctness of the claims of the German communiqués of the same date. It is, in fact, the Germans who are most to blame for exalting the importance of military aviators till the loss or capture of a single aeroplane occupies as much space in a communiqué as if the thing were an Army Corps. At any rate, the British G.H.Q. dispatches have not yet taken to the German habit of mentioning by name the individual "star turn" aviator who has brought down an enemy aircraft, and thus making his actually insignificant personality of greater prominence than that of a G.O.C. an Army Corps. There are many German customs, systems, and principles which one would like to see adopted in our Army, but that is not one of them. Even the Admiralty does not mix up the names of unimportant flying officers of the R.N.A.S. with official reports of Fleet actions; it has at least the tact to make a separate note of them, which need not be read by people who are only interested in the Navy and prefer to ignore its sometimes disorderly offsprings.

However, as regards machines which "fail to return"—as G.H.Q. has raised the point, it may be well to point out that, though the Germans have brought down a few of our machines by gun-fire or by "battle-planes"—as the daily Press likes to call them—we have lost far more by our own unwisdom. Some, of course, have been lost by sending out 70-mile-an-hour machines in a 60-mile-an-hour wind; or, as pointed out last week, if such a machine goes out with fuel for four hours and, after a flight at 130 miles an hour with the wind, has to try to cover 50 miles against the wind to get home, it simply "fails to return."

That is pure bad judgment on someone's part, though, mark you, if very important information were required at a point and it was obvious that no machine could get there and back, it might quite conceivably be worth while to send out a "wireless" machine with instructions to keep on "sending" to the limits of his instruments and then to come down, destroy machine and instruments, and surrender quietly.

The other cause of failure to return, for which we are absolutely to blame for our blindness, is engine failure. Before the war the Royal Aircraft Factory, which was then all-powerful, deliberately cramped all efforts to produce a British aero-engine, as well as stopping all efforts of British manufacturers who desired to manufacture French engines in this country. High officials at the War Office denied strenuously that the R.A.F. was endeavouring to produce an engine of its own, though I stated in this paper that such was the fact—as proved to be true.

In fact, the R.A.F. tried to work off on the motor industry precisely the trick it played on the aeroplane trade—only it found itself up against wealthy firms who were

able to fight. The scheme was, presumably, to design an R.A.F. engine and farm it out to good, obedient motor firms who would not try to go one better themselves.

Anyhow, the R.A.F. engine appeared, and was a failure. It has been altered and somewhat improved, but it is still unreliable. I will not say why and where, because that might teach something to the Germans who capture machines with R.A.F. engines which have "failed to return." Let them find out for themselves. I think I would back them to do so, and rectify the defect before the R.A.F. does so.

Even when the R.A.F. got hold of the first of the big Mercédès engines—a matter of seven or eight months ago—it tried to corner the job of copying the German engine itself, and made a mess of it, when by sending the job out to a first-class motor firm at the start—instead of fiddling with steel analyses and so forth—we would by now have had a big stock of British Mercs. The French, being a practical and honest-minded people, sent their captured Mercédès engines to one of their best motor firms, and to-day the French Merc. is said to be better than the German original.

But for the R.A.F.'s scheming before the outbreak of war, we might by now have had an almost unlimited supply of the finest engines in the world, and we should hear very much less of aeroplanes which "failed to return." Let this be remembered by War Office officials when the next readjustment of salaries, or distribution of honours, is being considered.—C. G. G.

A QUESTION.

A good deal of fuss has been made by aeronautical "experts" about sundry German aeroplanes exhibited at the Horse Guards. These machines are of very ordinary, in fact almost obsolete, type, and there is nothing much to be learned from them.

One writer, Mr. Massac Buist, of the "Morning Post," remarks very soundly, "What all students of aeronautics would like us to capture and exhibit is an example of the latest large-scale, weight-carrying, long-range German biplane."

There is very good reason to believe that such a machine has been captured and has been handed over to the Royal Aircraft Factory for the education of that firm's experts. I am told that so close is the guard set over this machine that even R.F.C. officers in uniform are not allowed to inspect it without special permission.

I therefore desire to ask the Department of Military Aeronautics whether any British manufacturers of aeroplanes or engines, or their designers, have been invited to inspect and study the newest captures from the Germans, or whether the information to be gathered from such study is to be the exclusive property of the Royal Aircraft Factory?

It might also be interesting to know whether the R.A.F. mathematicians have discovered from the captured German machines that one reason for the high effectiveness of German aeroplanes is that the construction of certain important parts is lighter than would be permitted to British constructors by the R.A.F. "experts," and, furthermore, whether the rest of the German success is due to the use of engines of the plain vertical water-cooled type which has been consistently "crabbed" by the R.A.F. for the past five years, while it was endeavouring to foist on the Army an inferior engine of its own?—C. G. G.

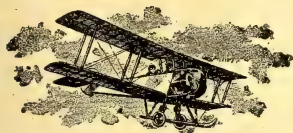
RHODESIA'S FOURTH AEROPLANE.

The people of Rhodesia have subscribed a further £1,500 for the purchase of an aeroplane for the Royal Flying Corps. This makes the fourth aeroplane given by Rhodesia to the British Government.

[One wonders whether Rhodesia will insist on her aeroplanes being allotted for more or less home consumption.—Ed.]

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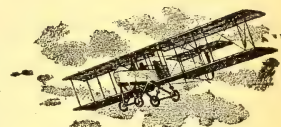
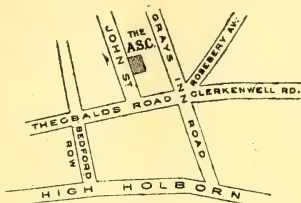
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

OUT OF DEPTH.

Those strange beings whom the daily Press so loves to label "experts" may be wholly excellent in their own particular line of business, but they occasionally take ugly tosses over matters just a little outside their own spheres of activity.

The Naval Correspondent of the "Times," discoursing learnedly on "Novel Combats by Sea and Air," informs us that "on August 12th Flight Commander C. H. K. Edmunds was reported to have sunk a Turkish transport by dropping a bomb full on the deck of the vessel in the Dardanelles." One almost regrets to inform him that the official report said nothing about "full on the deck," and to the best of my knowledge nothing was said even about a bomb.

Probably several German officers saw the particular machine which scored the hit in question, but even so, one will not tempt the Censorship's wrath by describing how it was done, whether it was in the Dardanelles at all, or even what happened to the transport afterwards. Probably the Turks know more about that than we do; perhaps more even than the R.N.A.S. It is always unsafe to build up a circumstantial story on insufficient evidence.

My chief quarrel with this particular "expert" is over the following passage:—

"The one new machine which has achieved practically nothing of a definite or decisive character in naval warfare up to the present is the airship. A letter from an officer in a destroyer, published in March last, summed up the naval view of these vessels; in regard to which the writer said that, although at night they might drop things on a town, they could not pick out and make accurate shooting at important objects. By day, they would probably not venture near an airplane or anti-aircraft gun. In a sea fight, where a ship was hotly engaged, they might come up unnoticed and drop a few tons of high explosives, but the difficulty of marksmanship would again come in. It was reported that on one occasion a Zeppelin endeavoured to drop bombs on a battleship, but was considerably alarmed

when a heavy gun in the latter, trained to extreme elevation, opened fire, the shell bursting uncomfortably close."

I wonder whether he calls the sinking of the three "Cressy" cruisers by submarines co-operating with a Zeppelin scout "nothing definite or decisive"? Anyhow, the German Admiralty awarded the whole Zeppelin crew the Iron Cross for the job.

Furthermore, officers who were on the Cuxhaven raid last Christmas Day think highly of Zeppelin bombing. It was only the superb seamanship of the officer commanding the "Empress" that saved that handy little ship from destruction, and as it was, one bomb burst only 20 feet or so from her bridge. Later in the day the submarine which rescued the crews of two seaplanes only escaped destruction by a very cool trick played by her commanding officer, who has since got a V.C. for another gallant feat—and after the submarine escaped the Zeppelin sank the two seaplanes, which meant a loss of about £5,000 to this country.

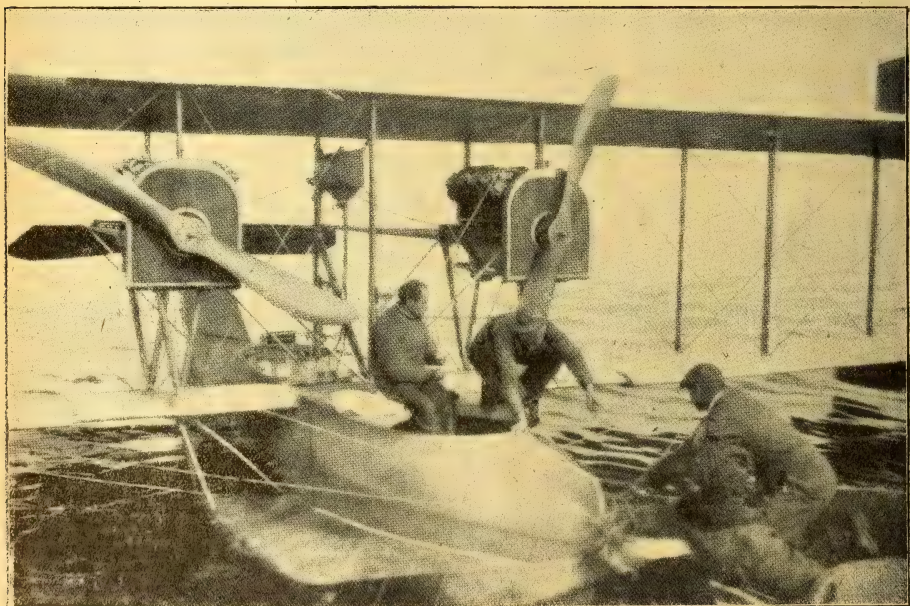
Even at home, the need for defence against airship raids necessitates immobilising about the equivalent of a full division of Infantry, not to mention special anti-aircraft guns, searchlights, etc.

Finally he falls into an old familiar trap by more or less jeering at Mr. Churchill's "swarm of hornets" because they have not prevented Zeppelins from coming over here. One must therefore remind him that hornets are not nocturnal fliers, and that no Zeppelin has appeared by day, which shows that the Germans recognise the airship's present limitations, and use the type with considerable skill and judgment.—C. G. G.

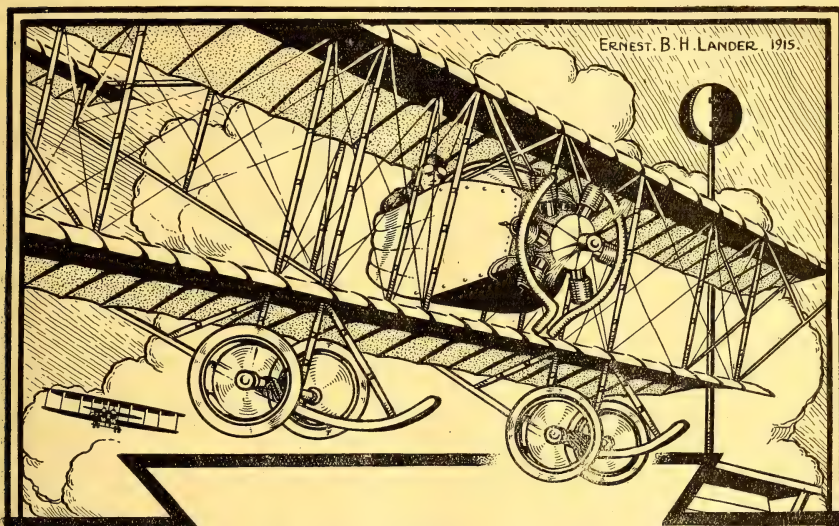
THE R.F.C. AID COMMITTEE.

The "Court Circular" dated Buckingham Palace, Friday, December 3rd, says:—

The Queen, accompanied by the Princess Mary and attended by the Lady Mary Trefusis, visited the Royal Flying Corps Aid Committee at Surrey House, Marble Arch, this afternoon.



A new type twin-engined Curtiss Flying Boat. (Published by courtesy of "The Aerial Age," New York.)



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GREAT BRITAIN.

From the "London Gazette," November 30th, 1915.

ADMIRALTY, November 27th.
ROYAL NAVAL AIR SERVICE.—Granted commn. as flight sub-lieut. for temp. service: F. Towers. November 27th.

From the "London Gazette" Supplement, December 1st, 1915.

WAR OFFICE, December 1st.
REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—Military Wing.—Flying Officers.—November 10th: Temp. Lieut. L. R. Heywood, R.E., and transf'd. to Gen. List; Sec. Lieut. F. N. Hudson, E. Kent, and seconded. November 11th: Lieut. W. E. F. Davidson, E. Yorks, S.R., and seconded; Lieut. M. S. Stewart, A.S.C., and seconded; Temp. Sec. Lieut. E. C. Jowett, Northd. F., and transf'd. to Gen. List; Sec. Lieut. W. D. M. Bell, S.R. November 13th: Temp. Sec. Lieut. C. M. Gibson, E. Surrey, and transf'd. to Gen. List; Temp. Sec. Lieut. R. H. Peck, Dorset, and transf'd. to Gen. List; Sec. Lieut. J. A. Soames, R. Welsh F., and seconded; Sec. Lieut. E. Selby, S.R. November 15th: Capt. A. M. Wilson, Gordon H., T.F.; Temp. Capt. W. Milne, Gen. List; Sec. Lieut. G. R. M. Reid, A. and S. H., S.R., and seconded; Sec. Lieut. M. T. Baines, R. Wilts Yeos.; Temp. Sec. Lieut. C. Seedhouse, Gen. List.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—Military Wing.—To be sec. lieuts. (on prob.): W. T. W. Wartnaby. October 27th. E. S. Perrin. November 19th.

From the "London Gazette" Supplement, December 2nd, 1915.

WAR OFFICE, December 2nd.
REGULAR FORCES.—ESTABLISHMENTS.—INFANTRY.—Highland Light Infantry: Capt. Daniel H. Macdonell, D.S.O., from Reserve of Officers and Royal Flying Corps, Military Wing, to be Capt. December 4th, 1915.

From the "London Gazette," December 3rd, 1915.

ADMIRALTY, November 30th.
ROYAL NAVAL AIR SERVICE.—Prob. flight sub-lieuts. confirmed in rank of flight sub-lieut.: L. G. Sieveking. June 7th. W. Perham. June 14th. Prob. flight sub-lieuts. for temp. service, confirmed in rank of flight sub-lieut. for temp. service: S. St. C. G. Belfield. April 16th. N. V. Wrigley. May 24th. C. R. Terraneau. May 31st. A. N. Gallehawk. June 10th. S. Kemball. June 15th. G. E. Williamson. June 25th. L. C. Shoppee. June 25th. R. A. W. Adkins. July 2nd. W. S. Stewart. August 7th. H. L. Wood. August 14th. F. C. C. Calder. August 21st. R. E. Greenstitch. September 5th. L. O. Brown. October 2nd.

WAR OFFICE, December 3rd.
REGULAR FORCES.—ROYAL FLYING CORPS.—Military Wing.—Flying Officers to be Flight Coms., and to be temp. capt. —November 17th: Temp. Lieut. J. G. Swart, R.A.; Lieut. A. C. Clarke, D.C.L.I., S.R. November 20th: Temp. Lieut. R. T. Leather, Warwick. Yeos.; Lieut. M. E. Lane, S.R. Sec. Lieut. Hon. O. M. Guest, Lothians and Border H. Yeos. November 21st. Lieut. G. H. Eastwood, S.R. November 22nd.

Flying Officers.—November 16th: Capt. T. A. E. Cairnes, 7th Dgn. Guards, and seconded; Capt. R. E. Orton, E. Lancs., and seconded; Temp. Sec. Lieut. P. G. Scott, Glas., and transf'd. to Gen. List; Sec. Lieut. C. Faber, S.R. November 17th: Temp. Capt. W. B. Anthony, Northd. F., and transf'd. to Gen. List; Lieut. J. V. Steel, R.A., and seconded; Sec. Lieut. E. N. Clifton, C. Guards, S.R. November 20th: Lieut. R. G. H. Murray, 9th Gurkha R. I.A.; Temp. Sec. Lieut. A. J. M. Clarke, Glas., and transf'd. to Gen. List; Sec. Lieut. J. B. Fitzsimons, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—Military Wing.—S. A. Currin, from Lieut. R.N.V.R., to be lieut. November 2nd.

From the "London Gazette" Supplement, Dec. 4th, 1915.

WAR OFFICE, December 4th.
REGULAR FORCES.—MEMORANDA.—Lieut. A. R. Earle, South African Aviation Corps, to be temp. Lieut., Gen. List, whilst employed with Royal Flying Corps, Military Wing. Oct. 23rd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—Military Wing.—Sec. Lieuts. (on prob.) confirmed in rank: G. D. Etches, S. Ransom, M. Hodge, N. Turner, E. Bush.

From the "London Gazette" Supplement, December 6th, 1915.

WAR OFFICE, December 6th.
REGULAR FORCES.—ADJ.-GEN.'S and QMR-GEN.'S STAFF. D.A.O.M.G.—Oct. 30th: Capt. G. M. Griffith, R.A., vice Lt. Maj. W. D. Beatty, R.E.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—Military Wing.—T. G. G. Bolitho to be Sec. Lieut. (on prob.). Nov. 1st.

NAVAL.

The following appointments were notified at the Admiralty on November 30th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieuts. (R.N.V.R.)—A. T. Miller and J. W. Hedge, both promoted to Temp. Lieut., with seniority of Nov. 28th, and reappointed.

W. N. Lucas-Shadwell, granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of November 28, and appointed to "President," additional, for R.N.A.S.

The following appointment was notified at the Admiralty on December 1st:—

ROYAL NAVAL AIR SERVICE.—Mr. J. M. Fraser entered as temp. lieut., R.N.V.R., and appointed to the "President II," additional, for R.N.A.S., to date November 30th.

The following appointment was notified at the Admiralty on December 3rd:—

ROYAL NAVAL AIR SERVICE.—Lieut.-Com., R.N., T. K. Emsley graded as flight comm., to date December 1st.

W. T. Curtis, entered as Warrant Officer, 2nd grade, for temporary service, with seniority of Dec. 2nd, and appointed to "President," additional, for duty with Royal Naval Air Service.

The following appointments were notified at the Admiralty on December 4th:—

ROYAL NAVAL AIR SERVICE.—Capt. D. T. Norris, to the "President," additional, for R.N.A.S., to date December 3rd.

Lieut. R.E. Special Reserve, P. T. Rawlings, granted a temp. commission as Lieut. R.N.V.R., and appointed to the "President," additional, for (E) duties in the R.N.A.S., to date December 2nd.

The Secretary of the Admiralty issued the following announcement on November 30th:—

A detailed report has now been received concerning the operations referred to in the War Office communiqué published this morning.

On November 28th Flight Sub-Lieut. Viney, R.N.A.S., accompanied by a French officer, Lieut. le Comte le Sinqay, whilst patrolling off the Belgian coast, dropped a bomb on a German submarine. The submarine was observed to have her back broken, and sank within a few minutes.

During the course of the same day Flight-Lieut. Ferand, R.N.A.S., with Air Mechanic Oldfield, in a seaplane shot down a German Albatros seaplane off Ostend. The Albatros dived nose first into the sea and sank.

The Secretary of the Admiralty made the following announcement on December 2nd:—

With reference to the announcement made on November 25th regarding the establishment of a special scheme for the enrolment of men in the Royal Naval Volunteer Reserve (Section Y) for future service in the Royal Navy and Royal Naval Air Service, it is desired that it should be clearly understood that only men who are free to come up for service when summoned in their group at any time within the next nine months can be enrolled for naval service under the scheme. It should also be understood that men will be required to come up for service when summoned in their group after a fortnight's notice, and applications for such service to be deferred cannot be entertained unless in very exceptional circumstances.

Men who do not satisfy these conditions and all "starred" and "badged" men will not be accepted for enrolment in the Royal Naval Volunteer Reserve (Section Y) for future service in the Royal Navy or Royal Naval Air Service, but should apply for attestation in the Army Reserve, Class B, and classification in their group under Lord Derby's scheme.

Such men will not thereby be debarred from offering themselves for naval service if they become available for service in the military forces, but facilities will be afforded them to transfer to the naval service if they are suitable and are required by the Admiralty. On attestation in the Army Reserve, men who prefer, if called up, to serve in the Royal Navy should notify the Army Recruiting Officer or Attesting Officer, informing him of the rating

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in which they wish to serve. This will be noted, and if available for service when called up in their Army group they will be accepted for entry into the Royal Navy or Royal Naval Air Service under the ordinary conditions *if suitable and required by the Admiralty*. [It should be noted here that this clause indicates that if not required by the Admiralty they may be used as infantry.—Ed.]

Men already attested in the Army Reserve, Class B, who have special qualifications for the Naval Service or a preference for that Service are free to offer themselves either for immediate entry in the Naval Service or for transfer to that Service when their Army group is called up. In the former case they should apply to the nearest Naval or Marine Recruiting Officer, and in the latter they should immediately notify the Army Recruiting Officer in their district. In both cases men will be accepted for naval service only if they are found suitable and are required by the Admiralty.

The Secretary of the Admiralty announced the following casualty on December 3rd, under date December 1st:—

DROWNED.

Flight Sub-Lieut. Basil F. M. Hughes, R.N.

The following appeared in the obituary columns on December 6th:—

HUGHES.—On December 1st, drowned in seaplane accident, Flight Sub-Lieutenant Basil Frederick Murray Hughes, Royal Naval Air Service, eldest son of the Rev. and Mrs. F. G. Hughes, Slinfold Rectory, Sussex, aged 19.

Dr. Cohen, the Hendon coroner, held an inquest on Friday, December 3rd, on William Charles Brandon, aged 22, of the Royal Naval Air Service, who died from the effects of an accident at the London Aerodrome on Thursday. The jury returned a verdict of death from misadventure.

Questions relating to the presumed death of and to the estate of Earl Annesley, who, when flying from Eastchurch to Dunkirk on a biplane in company with Lieut. Beevor, disappeared and was never heard of again, came up for decision before Mr. Justice Astbury on December 2nd.

Mr. Russell, K.C., who appeared for Countess Annesley, said inquiries had been made of German prisoners in this country, and information had been obtained at Ostend which all went to show that the two aviators were shot down behind the German lines in the neighbourhood of Lille and memorial crosses had been erected near the spot.

His Lordship, answering questions put to him, held that there was no reasonable doubt that the Earl was dead, and that the Countess was absolutely entitled to all the property comprised in the marriage settlement of July 4th, 1910.

The following effort by "Reuter," dated Paris, November 30th, is too good to miss:—

"A British communiqué issued here to-day describing the destruction of a German submarine by a British aeroplane off Middelkerke on November 28th states that in order to accomplish her task the British machine came down to less than 300 metres (about 984 ft.) above the German vessel. The aeroplane's pilot was British (Flight Sub-Lieut. Viney) while the French officer (Comte de Sinçay) released the bombs."

The exactitude of that "about 984 ft." in conjunction with "came down to less than" is quite typical of the English journalist, but the thing one would most like to know is what the pilot was while the French officer was not releasing the bombs?

Flight Sub-Lieut. Viney, pilot of the second aeroplane to sink an enemy submarine, is 24 years old. He was

born at Saffron Walden, in Essex, and lived for seven or eight years in South Africa, where he was educated at Kingswood College, in Grahamstown. When his family came to England he went to Mill Hill School. At the outbreak of the war he returned to the Cape and joined Prince Alfred's Guards, and served six months with the Union forces in South Africa. In March of this year he was granted a commission in the Armoured Car Squadron, Royal Naval Volunteer Reserve. In June he transferred to the R.N.A.S. and took his certificate on July 1st.

One must be careful to remember, for the good of the young officer concerned, that the credit must be very equally divided between the pilot who got the machine to the right place and the passenger who let go the bombs at the right moment.

[See French Notes for detailed account of the operation.—Ed.]

MILITARY.

The following passages in the telegraphic dispatch dated from General Headquarters in France, December 2nd, 1915, dealt with aircraft:—

(3) On the 30th two hostile aeroplanes were brought down by fire from our aeroplanes, one falling east of Hooge and the other near Henin Liétard.

On the same day twenty of our aeroplanes bombed an important German Supply Dépôt at Miraumont, causing considerable damage to stores, buildings, and to the railway.

One of our aeroplanes which had been on reconnaissance on December 1st failed to return, and another on December 2nd.

The following passage in the telegraphic dispatch, dated General Headquarters, 7.56 p.m., on December 6th, refers to aircraft:—

(1) On the 2nd an air raid was carried out against Don Station and the buildings in its vicinity. A munition store is believed to have been blown up, and the railway was hit near the station. Some fires were observed in Don after the raid. All machines returned safely, although several hostile machines were met and engaged.

The following appeared in the Casualty List published on December 2nd:—

Previously reported Missing, now reported Wounded and Prisoner of War.

Capt. C. C. Darley, R.F.A. and Royal Flying Corps.

Officers previously reported Missing, now reported Prisoners of War.

Sec. Lieut. H. W. Medlicott, Royal Flying Corps.

Sec. Lieut. R. J. Slade, Army Cyclist Corps, att'd. Royal Flying Corps

The following casualty in the Canadian Contingent with the Expeditionary Force was also made known on December 2nd:—

Previously officially reported Missing, now unofficially Reported Prisoner of War.

Lieut. D. Leeson, 7th Infantry, att'd. Royal Flying Corps.

The following appeared in the Casualty List published on December 3rd:—

MEDITERRANEAN EXPEDITIONARY FORCE.

ACCIDENTALLY KILLED.

Sec. Lieut. W. H. Bastow, Royal Field Artillery.

[Mr. Bastow, who was granted a commission in January last, was apparently killed as passenger with Flight-Lieut. Rose at the Dardanelles. He was lent to the R.N.A.S. as an observer.—Ed.]

The following casualty previously shown as "Reported from the Mediterranean Expeditionary Force," should have been shown as "Reported from the Persian Gulf":—

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Officially reported Missing, and unofficially reported Prisoner of War.

Capt. T. W. White, Australian Flying Corps.

[It may be remembered that this error was pointed out in THE AEROPLANE of December 1st.—Ed.]

THE PERSIAN GULF.

Officers officially reported Missing, and unofficially reported Prisoners of War.

Sec. Lieut. E. J. Fulton, 1st Lancers, att'd. Royal Flying Corps.

Maj. H. L. Reilly, 82nd Punjabis, att'd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on December 6th under date December 1st: MISSING.

Buckley, Lieut. S. E., 5th Northamptonshire, att'd. Royal Flying Corps.

Ward, Sec. Lieut. H. S., Royal Flying Corps.

[See the German communiqué of December 1st.—Ed.]

* * *

The following appeared in the Obituary Columns on December 3rd:—

KELWAY-BAMBER.—Previously reported missing, now known to have been killed in an engagement with two German aeroplanes on November 11th, Sec. Lieut. Claude Herschel Kelway-Bamber, 6th Squadron, Royal Flying Corps, dearly-loved younger son of Herbert Kelway-Bamber, M.V.O., London Representative Leeds Forge Company, late of East Indian Railway, and of Mrs. H. Kelway-Bamber, 6k, Hyde Park Mansions, W., aged twenty years. (Indian papers please copy.)

Mr. Bamber was gazetted to the Royal Flying Corps in July of this year, his second lieutenant's commission in the Army being dated October, 1914.

* * *

The following appeared in the marriage columns on December 6th:—

WEIR—CHRISTIE.—On the 2nd December, at Edinburgh, by the Rev. W. Sangster Anderson, Major James G. Weir, 3rd Highland (Howitzer) Brigade, R.F.A., and Royal Flying Corps, youngest son of James Weir, Esq., of Overcourage, Lockerbie, to Mora Morton, elder daughter of James M. Christie, Esq., of Morton, Fife.

* * *

The "Daily Chronicle" of December 1st says:—

Mr. John Redmond has been good enough to allow us to see his diary of his recent visit to the fronts in France and Flanders. Some interesting excerpts are given below.

"By the aid of aeroplane photography our Army is in possession from day to day of elaborate photographs of German trenches. I was shown the daily map which is issued, on which is plainly marked every portion of the whole intricate system of German trenches, and on which is also marked the position of every German battery behind their lines."

Mr. Redmond tells the story of the speech which was punctuated by air-gun [the "Chronicle" means anti-aircraft guns] shots at a Taube overhead: "The Munster Fusiliers had marched on to the ground playing the 'Wearin' of the Green' on their band of Irish war-pipes, and carrying a green Irish flag. After I had spoken a few sentences the battery on my left rang out with startling suddenness, and we then became aware that there was a hostile German Taube aeroplane right over our heads. From that on until the end of my speech the British guns on the one side and the French guns on the other fired shrapnel shells at the Taube at regular intervals. It was a strange experience for me to have my speech punctuated, not by applause, but by the roar of guns situated only a few yards from where I was standing."

"While this firing was taking place not one of the men even lifted his head to look in the sky at the aeroplane, but remained absolutely passive at attention. When I

finished my speech the men cheered lustily, and marched away playing 'O'Donnell Abov.' At the commencement of the war the men had five green flags. Now they have only one, and I promised to supply the deficiency."

* * *

The following, which is acknowledged with thanks to the "Morning Post," is extracted from the letter of a Flight Commander on service in France:—

"Yesterday I had my first really trying experience. We did a long reconnaissance which took us nearly to Mons, taking us four hours and five minutes. When we left the ground it was freezing hard, and en route we encountered two snow storms. The cold was absolutely excruciating, my eyes got frozen up; it sounds absurd, I know, but the water in my eyes turned to ice. I had to keep on brushing it out of my eyes. A great sheet of ice formed over the mouth outlet of my mask so that I had to smash it to breathe. We finished off by fighting a German machine and chasing it from Arras to Douai, where he dived down under cover of his Archies and Horaces. We arrived back, and the pilot, being nearly dead with cold, crashed the machine on landing. Fortunately neither of us was damaged. When we got in we found that they were just preparing to pack our kits, as they thought that we must have been brought down in Germany. I have added one of the propeller-blades of the crashed reconnaissance machine to my collection."

"Sunday Night.

"What a day! I was just getting up at 9 a.m., having had a lazy morning, when a message came down from the office to say that two Huns were on their way to —. I ordered out one of my machines—the one I always go with—and we left the ground to cut them off. When we were over B—, well in our own lines, at about 5,000, we spotted a Hun at about 11,000. We chased it, climbing all the time, till, when just near Lille, or about ten miles into the German lines, we got level with it. By this time the German (an Albatros) had been joined by two other Huns. We swept past the Albatros (a big white machine), and I got 40 rounds into it at close range; he barked, then rose, dived to earth, and crashed, apparently turning over."

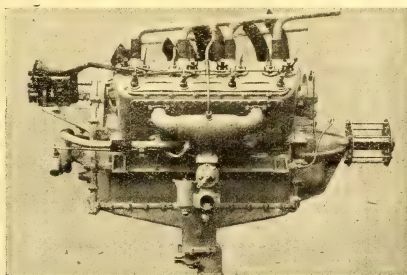
"By now the other two machines had turned to engage us, and on turning we found two more coming from over Lille. Four to one—good odds. Fairly long odds; but still we thought we'd have a good smack at it. Rather to our annoyance we saw what we took to be a sixth German—a tiny little single-seater. On they came; they came in line; sweeping past us on the left, round behind our tail, and back on the right. To our surprise the little tiny machine fastened on to the tail of one of the Boches and chased it round and round, and proved to be a little Morane scout. They came on time and time again, pouring machine-gun fire on us, but for every one shot we got they got one back, but at one time we were getting the fire of four machines at once."

"My hands began to lose all feeling, but I kept the gun going. Bang! bang! came their shots; we could feel the little jars as our machine was hit. But apparently they got more than they gave, as after 25 minutes' fighting two machines cleared off towards Lille and the other two, not liking to be left to fight two British machines (although one was only a little single-seater), flew off southwards. The scout and we at once gave chase to one of them, but had to give up the chase 20 miles farther south, and gracefully retired to our own lines to the accompaniment of much Archy."

[One fears the publication of this letter will mean another fractured friendship, for the Squadron can easily recognise the writer of the letter, and the writer can recognise the person who sent it to the paper. Still, the story is so graphically and yet so unaffectedly told that it would really have been a pity to keep it for consumption on the premises only.—Ed.]

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

FRANCE.

The communiqué of December 1st says :—

In Artois, in the course of yesterday, one of our aeroplanes attacked, over the enemy's lines, two German machines, one of which was obliged to descend. The other fled, and was pursued as far as Douai.

During the day of November 28th a French aeroplane dropped six 90 mm. bombs on the huts near the station of Lens, which were seriously damaged.

* * *

The communiqué of December 6th says :—

During the day of December 4th . . . our guns fired on the enemy's workers in the region of the outlet of the Kereves Dere. Our aeroplanes dropped a large number of bombs on the Turkish encampments.

* * *

The Sergeant-aviateur Georges Carpentier, the famous boxer, has been awarded the Croix de Guerre with palms. The exact text of the order is :—Sergeant Carpentier (Georges), pilot in the escadrille, M.F. 55. On September 25th did not hesitate to fly in fog and rain less than 600 feet above the enemy's lines during action. In several circumstances he has given proof of remarkable coolness and energy, never returning before the completion of his mission, often with his machine riddled with bullets and shell fragments.

* * *

The "Matin" of December 2nd states that M. le Comte de Sincay and "Lieutenant" Viney have been nominated for the Legion of Honour and for the Victoria Cross respectively, because of the conspicuous gallantry they showed in attacking and destroying a submarine by aeroplane, off Nieuport. The following purports to be an interview with the aviators themselves :—

"The incident occurred about midday on Sunday. We had left about 11.30 on a French biplane to look for submarines, which had been reported at sea. We rose to a height of about 3,000 metres, and had been up about half-an-hour when to the west of Nieuport, about four miles from the shore, we saw two submarines side by side on the surface.

"The place was favourable for attack, as the sea is shallow, and we hoped that the submarines would be unable to escape by diving. Coming down as rapidly as possible in spirals we determined to destroy one of the enemy's vessels. We soon saw it was in a critical situation, because instead of diving it tried to escape by irregular flight, changing its direction at every moment, and swimming in zigzags. It was above a sandbank, and consequently could not find refuge in deep water.

"As we realised that we should not be able to hit it we decided to encircle the second boat. This boat was evidently harder to handle, because in spite of its efforts it could not get out of the ring we made round it as we dropped towards it. We came down to 200 metres above the sea. When we were almost certain to hit we dropped the first bomb, and saw that we had hit. Even with the naked eye we could see that damage had been done to the deck. We flew two more circles round the submarine, which could not escape, and a second bomb finished it. The submarine opened and sank.

"Time was now precious. We had to return to Dunkirk quickly, as the other submarine might have had time to warn the enemy aviators, who would perhaps prevent our return. We rose quickly, while we continued to watch the place where the submarine sank. There was no doubt whatever about it that the boat was sunk, the characteristic pool of oil, which is the best proof of the success of such operations, was spreading visibly and soon was covering a considerable area of water."

[Apparently quite a neat piece of work and one deserving commendation, but one fails to find any reason for a V.C. about any of the published accounts. Special promotion seems to meet the case, as a D.S.O. has already

been given for the first sinking of a submarine by aeroplane—unless, of course, a D.S.O. is to be the recognised price of a submarine. If this account is entirely authentic, one assumes that it was given by the French officer, as it seems unlikely that, after the fearful examples of too much freedom with journalists which occurred in the early part of the war, even a very junior Flight Sub-Lieut. would be so foolish as to consent to a regular interview.—Ed.]

* * *

The "Morning Post" correspondent with the French Army says :—

"In considering the probable course of the winter campaign due regard must be given to the German transport arrangements. There was a period after the forward movement in Eastern Champagne when our aviators became exceedingly active and daring. Their raids upon the German lines of communication were very successful, and it is known that the damage they did to important railway centres had begun to cause the enemy serious apprehensions. At that time we had practically chased the enemy's aircraft from the sky, or at all events had established a marked superiority. A period of forced inaction followed during the unfavourable weather, but, evidently acting upon urgent commands, the German aviators have revived somewhat of late, at any rate they are showing more fight. Any interruption of their railway communications is a very serious matter for the Germans, because they depend upon them to a much greater degree on their Western than upon their Eastern front, and to a much greater degree than we do."

GERMANY.

The communiqué of November 30th says :—

A German aerial squadron attacked the railway buildings at Ljachowitschi, south-east of Baranowitschi.

* * *

The communiqué of December 1st says :—

West of La Basse . . . we shot down one British and one French aeroplane, capturing the occupants.

* * *

The communiqué of December 2nd says :—

North-west of Saint Quentin we captured a biplane with two British officers, which, owing to engine trouble, was obliged to land.

* * *

The communiqué of December 3rd says :—

West of Roye a French biplane was obliged to land by the fire of our anti-aircraft guns. The occupants, two officers, were taken prisoners.

* * *

The communiqué of December 6th says :—

In an air battle in the region of Bapaume two English aeroplanes were shot down and the occupants killed.

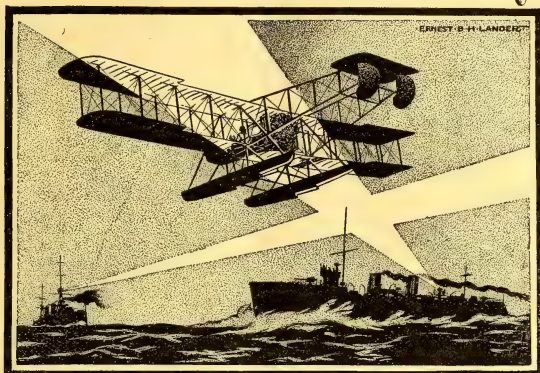
Near Markgrafen, on the Courland coast, a German aeroplane was hit from the sea by the Russian artillery. We brought the aeroplane and crew into a place of safety.

* * *

Reuter's correspondent in Copenhagen reported on December 1st that he had interviewed Baron Cederström, "the well-known airman and director of the Swedish Government aeroplane factory at Söndertelje, near Stockholm, who has returned from Germany, where he visited a number of aeroplane factories." According to him, Baron Cederström's view is that the entire German production of aircraft is undergoing a complete revolution. "Light monoplanes are things of the past, and the builders are devoting their energies to the construction of heavy armoured biplanes capable of carrying immense loads of guns, wireless apparatus, petrol, bombs, and signalling apparatus for long journeys. The revolving air-cooled motors have almost been entirely discarded for stationary water-cooled engines, with which at least 98 per cent. of the present output of aircraft is fitted."

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[Which is quite a comic view, because Germany never built light monoplanes till recently, and specialised on big biplanes "capable of carrying immense loads" long before anyone else did. We have seen the result on the West Front for several months. Furthermore, it is only within the last few months that the Germans have taken to using "revolving air-cooled motors" (The Stahlherz) in any quantities, and they are using them on the small high-speed Fokker monoplanes and biplanes—built by the well-known Dutch aviator, and strongly resembling Moranes. Lieut. Immelmann, the German "star turn" aerial duelist, uses one of them. In fact, the truth is, that instead of discarding air-cooled rotaries the Germans have just adopted them for the special work to which they are suited.—Ed.]

In continuation, the Baron is reported to have said that he made a trip in a "new giant battle aeroplane," which he described as a revelation of carrying power, stability, and speed. He declined to give details, but declared that the machine had nothing in common with the Russian giant machine reported to have been brought down and copied. [Which, of course, it was not, seeing that the Germans could teach Russia how to build aeroplanes of any kind.—Ed.]

He said it was simply a biplane of improved design and enormous dimensions, nearly three times the size of the ordinary Albatros, but with proportionately broader planes and immense horse-power. It carries a hitherto unprecedented weight of armour and artillery, petrol, provisions, etc., and a very large crew. [Of course, all these newspaper aeroplanes do.—Ed.]

The engines made a terrific noise, but the aeroplane flew without a hitch, the steering being conducted by a pilot on a structure resembling the bridge of a steamer.

[In conclusion, one may add that Baron Cederström is a very old hand in aviation, having learned to fly at Pau on a Blériot in 1909-10, so he was not very likely to be deceived in what he saw, but it is well to remember that the Swedes are—somewhat naturally—inclined to be pro-German, and that the Baron had a great reputation at Pau as a "leg-puller."—Ed.]

BELGIUM.

The "Telegraaf," Amsterdam, November 30th, states that four Allied aviators dropped bombs on Gits and Veveren, near Roulers, on November 27th. At Beveren some soldiers were wounded, and some sixty horses killed or hurt. No damage was done at Gits.

* * *

According to a report from Brussels, a court-martial on November 12th sentenced 15 persons, including 5 women, to imprisonments of from 2½ to 15 years, for having hidden and assisted a French aviator to escape.

HOLLAND.

A telegram to the "Telegraaf," Amsterdam, December 1st, states that a German aeroplane coming from the direction of Bruges descended near Aardenburg, in the Province of Zeeland, on that day. The aeroplane and the motor were damaged. The two occupants, Lieut. Reiche Eissenbruch, of the 77th Saxon Regiment, with his mechanic, Liemer, were conveyed to Aardenburg, and were interned.

BULGARIA.

A Bucharest telegram of December 2nd to the "Corriere della Sera" of Milan, regarding the probable new war area on the Rumanian-Bulgarian frontier, says that a Zeppelin has been brought to Rustchuk—presumably to watch the Dobrudja for approaching Russian troops.

SERBIA.

It is reported that the son of the Serbian Consul at Geneva, who has just returned from Serbia wounded, says that what has most hampered the Serbian Army has been the lack of aeroplanes, for all its movements were immediately known to the Austro-Germans, while it could not reconnoitre their movements.

[Well! Serbia only has herself, or rather her Government, to blame. She had aeroplanes in the first and second Balkan Wars and made a mess of them, despite the lessons she must have had from the good use the Bulgarians made of their aircraft both at Tchatalja and Bulair. Even in this war she has had the loan of such first-class French pilots as MM. Paulhan and Martinet, and she has had heaps of time to form a proper air service if she had gone to work properly. There seems quite a close resemblance between the dilatory policies of Serbia and England in this respect—and others.—Ed.]

TURKEY.

The communiqué of December 4th says:—

"On the Irak front . . . on December 1st, in the forenoon . . . we captured several hundred prisoners. . . . Among the prisoners, who are mostly English, are one major, one captain, and one flying officer."

* * *

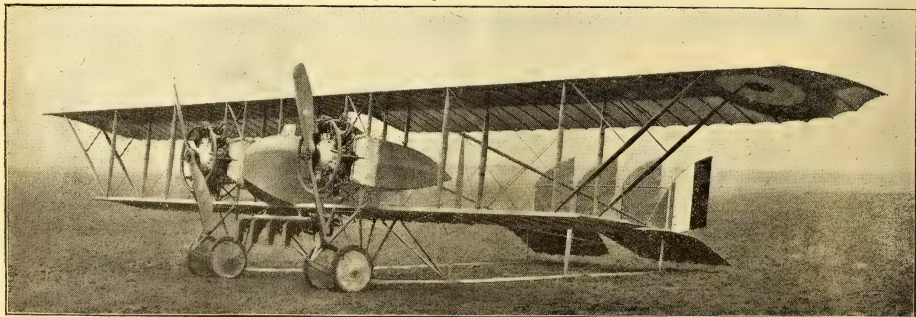
The communiqué of December 5th says:—

Near Seddul Bahr, Lieutenant-Aviator Ali Riza shot down an enemy aeroplane, and bombarded an armoured cruiser, which was forced to steam away.

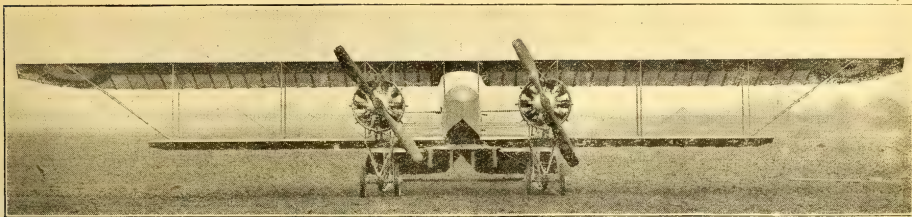
A torpedo-boat which rushed to the assistance of the armoured cruiser ran ashore. Thereupon the aviator opened machine-gun fire against the crew on deck of both vessels and forced an approaching enemy aeroplane to withdraw.

On December 2nd the same aviator attacked an enemy monitor, which was bombarding our positions. The monitor was obliged to cease fire.

[The story reads like a "story," but as it is known



Three-quarter Front View of the twin-engined British Caudron with Anzani motors.



Front View of the twin-Anzani British Caudron.

for certain that some months ago a Turkish—or German—aviator, after dropping bombs on a British aerodrome at the Dardanelles, deliberately came down to sea-level and “took on” a destroyer with his machine-gun, the story may be true, especially as the Turkish communiqués—allowing for differences in the point of view and for pardonable misapprehensions—have been exceedingly accurate.—Ed.]

MESOPOTAMIA.

The following account of air work in Mesopotamia occurs in an official report published in the Australian papers. After referring to general aerial reconnaissance work, Captain Petre, the senior Flying Officer remaining, says:—

“The Caudron aeroplanes Ca. 3 and Ca. 4, piloted by Major Reilly and Lieutenant Merz, and with Captain Atkins and Captain Palmes as passengers, had left Basrah early on July 19th. Not having been at Nasiriyah, I am unable to give any details of the operations, but the town was entered on July 25th, the aeroplanes, I understand, having proved exceedingly useful. The pilots on this occasion were Major Reilly and Lieut. Merz, and the observers Captains Palmes and Atkins and Lieut. Burn. Very considerable trouble was experienced with the Gnome engines in the hot atmosphere, as they proved to be even more unsuitable to heat than the Renaults. This had been rather anticipated, but nothing else was available.

“On July 28th, I again went out to Aba-Salabig to establish a refilling depot for the return journey to Basrah, and it was during this journey that Lieut. Merz and Lieut. Burn were killed. On July 30th, the return journey was commenced, Major Reilly piloting No. 3 machine, with Capt. Palmes as passenger, and Lieut. Merz piloting No. 4 machine, with Lieut. Burn as passenger. Major Reilly landed at Aba-Salabig at 11 a.m.; he stated that his engine had failed about 20 miles from Nasiriyah, and that he had landed near the Arab town of Khamsieh. No. 4 was flying close to them at the time, but did not land, and was soon out of sight. The Arabs of Khamsieh were friendly, and assisted Major Reilly, and after a delay of a few hours he rectified the trouble, which proved to be weakened inlet valve springs, and flew on to Aba-Salabig. I should mention that the course we have always followed when making flights in this neighbourhood is to skirt the inundations from Suk-esh-Sheyak to Shaiba, from these crossing over to Basrah.

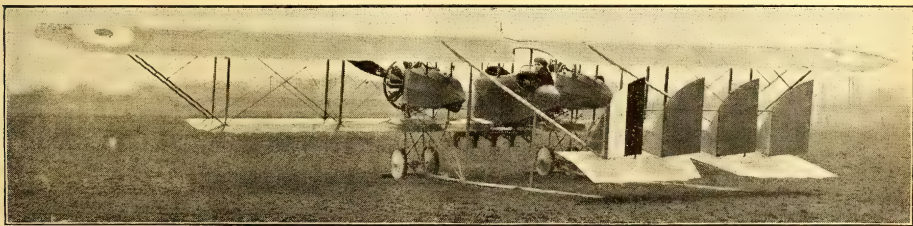
“When Major Reilly arrived at Aba-Salabig a fog of dust was rising over the desert, and he therefore decided to stay there overnight, as these dust storms have always cleared off by the morning, even if the wind that caused them blows all night. We did not feel very anxious at the non-appearance of the other aeroplane, because we thought that they had gone straight on to Basrah, particularly as Lieut. Merz had missed the island on the way out, and we knew that he had ample petrol for the journey. The next morning Major Reilly flew on to Basrah, and I remained on the island.

“On the evening of August 1st at about 8 p.m., we sighted a ‘Verys’ Light’ fired from the water to the east of Aba-Salabig. I fired a light in reply to this, and proceeded with two launches which I had with me towards the direction from which it had appeared. It was, however, dark. Our propellers got continually fouled with weeds, and in the end we ran aground. I therefore anchored for the night, and lit an acetylene flare, which lasted for several hours. At dawn next morning we got our launches off the mud, and continued towards the east. After proceeding a mile or two we met a ‘bellum’ (a sort of heavy Arab canoe about 25 feet long, 3 feet beam and 1 foot 6 inches deep). In the bellum were Lieut. Wells, R.F.C., Staff Sergeant Heath, an Arab pilot, and two Indian sailors.

“Lieutenant Wells had been sent up in a steam launch with a pack wireless set and extra rations for my party. It was from him I first learned that No. 4 Caudron was missing. His launch had run aground soon after he got into inundations from the Shatt-al-Arab, near Shafi. He had been unable to get into communication with Basrah, on account of engine trouble with his wireless, and so he came on in the bellum. He and the others with him had poled the bellum all day, covering a distance of nearly 30 miles in the intense heat. I gave him one of my launches, and sent him back to Shafi to bring on the wireless set, returning myself to Aba-Salabig.

“As I reached the shore Major Reilly arrived from Basrah in a Maurice Farman biplane, and as soon as the engines had cooled down I proceeded with him in it towards the west to look for the missing aeroplane. After going about 20 miles we sighted it and landed.

“There was absolutely no trace of the officers, the only objects left were a Gnome spanner and one high tension lead and two burnt-out smoke bombs. The aeroplanes had



Three-quarter Back View of the twin-Anzani British Caudron.

made a good landing, but the planes had been slit up with knives, and the tail and nacelle broken. We then flew on another five miles towards the west before starting back to 'Aba-Salabig, flying low and looking for any signs of the aviators, but could see nothing. At Aba-Salabig we interviewed the Sheikh, and had search parties sent out to make inquiries on the mainland, but these marsh Arabs are afraid of the Bedouins of the desert, and we were not hopeful of accomplishing anything. The next day I got into communication with Basrah and was recalled.

"The matter was then put into the hands of the political officers, and they ascertained that the murder had been committed by a band of Bedouins, who were travelling to Gurnat Ali, and the Shatt-el Arab, about six miles north-west of Basrah. Three of these Arabs had been wounded by the officers and one killed. The bodies of the two officers have not yet been found. A force comprised of one company 66th Punjab, one machine gun section, with two mountain guns, accompanied by Captain T. W. White, Australian Flying Corps, proceeded to Gurnat Ali, on the night of August 24th, and an advance was made on the village at dawn on the 25th.

"With the party were one political officer and the Commissioner of Police. The village was searched, as also was the Bedouin Arabs' camp on the desert, and no resistance was offered. The tents of Lafi, the Bedouin Arab, who was reported to be one of the murderers, were searched, but nothing belonging to the missing officers could be found, and all the able-bodied men from the village and Bedouin camp had left. The country was open at the Bedouin camp, and thickly grown with palms near the village, and it would have been an easy matter for the wanted men to avoid capture.

"The huts and tents of Lafi and his followers in the camp and village were destroyed, and all arms found brought back, the party returning to Basrah on the afternoon of August 25th. One of the wanted men has been captured, and is now in the lock-up at Basrah waiting trial. Large rewards have been offered to obtain some clue as to the murderers, but so far without success. The matter is still in hand, and it is sincerely hoped that the culprits may be brought to justice ere long.

"On August 23rd the flight left for Amarah in view of a further advance up the river Tigris. Lieutenant W. H. Treloar is the only officer of the Australian Flying Corps who accompanied the flight on this occasion. I have been left at the base to instruct officers in flying. Captain T. W. White is also at the base in command of the Flying Park."

[Capt. Treloar and Capt. White have since been taken prisoners by the Turks, as has Major Reilly.—Ed.]

AUSTRALIA.

The Melbourne "Age" states that an Australian altitude record was put up during the week ending October 12th at Point Cook aviation school by military officers. The record was made by Capt. Eric Harrison, who piloted the machine, and Major Reynolds, of the General Staff, in the passengers' seat. After leaving the aerodrome, the biplane climbed steadily for 30 minutes, reaching a height of 8,200 feet, which is stated to be the record height for the B.E. machine with both pilot and passenger. [One imagines that the record—assisted by Archie and a modern engine—is something nearer double that height.—Ed.] From this altitude the officers had a unique view of Melbourne and the surrounding country, their radius of vision extending to 110 miles or so. The descent was made in fifteen minutes.

The flight is typical of the good work being done by Capt. Harrison and his staff at the school.

U. S. A.

Two Burgess-Dunne seaplanes have been bought for coast-patrol work, one by Godfrey Cabot, the other by a syndicate of four Boston men. Now the Maine cities round Bangor have put up \$10,000 for a machine to patrol that part of Maine.

THE R.N.A.S. COMFORTS FUND.

The following cash contributions to the above Fund are acknowledged this week:—Mrs. Foster-Cunliffe, £15; Anon, £10; Mr. S. Barker, £5; Collection, Aviation Dept., Sunbeam Motor Works, £4 10s.; Miss Body, £3; Miss Watson, £2 2s.; Mr. and Mrs. Brinkworth and family, £1 5s.; Mrs. Gnosselius, £1 1s.; Mrs. Robin Grey, £1; Anon, 4s. Total for the week, £43 2s.

Up to this date a total sum of £1,407 15s. 9d. has been collected, but practically all this has been spent and further sums are urgently needed to supply the requirements of the rapidly increasing personnel of the R.N.A.S.

The whole stock of blue woollen mufflers, helmets, etc., is exhausted and more are badly needed. Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

MORE OFFICIAL HUMOUR.

The Admiralty Board of Invention and Research has now appointed a number of permanent sub-committees. These will work in conjunction with the Central Committee, of which Lord Fisher is president.

The sub-committees which deal with subjects connected with engineering are grouped into six sections.

Section I embraces airships, aeroplanes, and seaplanes; included in the sub-committees dealing with these are Professor the Hon. R. J. Strutt, Dr. R. T. Glazebrook, Mr. F. W. Lanchester, Mr. R. Threlfall, and Mr. H. T. Wright.

Section III has four sub-committees, the third of which deals with internal combustion engines, and includes Commander the Marquis of Graham, Professor Bernard Hopkinson, Mr. A. E. L. Chorlton, Mr. R. P. Doxford, Mr. Summers Hunter, and Mr. F. W. Lanchester.

In Section IV there is only one sub-committee—on anti-aircraft apparatus of all kinds—and this consists of Admiral Sir Percy M. Scott, Professor Sir W. Crookes, and Professor H. F. Newell.

Finally, in Section VI we have the question of the armament of aircraft, bombs, and bomb-sights referred to a single sub-committee, consisting of Professor B. Hopkinson, Admiral Sir Percy Scott, and Mr. R. Threlfall. In each case the sub-committees have a technical secretary, that of the last mentioned being Flight-Commander Lord Edward Grosvenor.

UNOFFICIAL HUMOUR.

The "Daily News" is to be congratulated on its new and deliberately humorous version of the story of the British officer who tipped two Germans out of his machine after he had been captured and forced to take them up. The "News" calls it "The Airman's Tale":—

"I refused to fly with lady passengers at first because they always talked and fidgeted. But one day a couple of sisters persuaded me to take them up, promising to sit still and be very quiet. They kept their word—I didn't hear a sound behind me—and so I looped the loop once or twice as a little treat for them, and then started to come down. Suddenly there was a touch on my shoulder, and a soft little voice said, 'May I make a remark, if you please?' 'Oh, yes,' I answered. 'Then,' said the soft little voice, 'My sister Kathleen is no longer with us.'"

"TWO BIRDS WITH ONE STONE."

It has been pointed out that under the new regulations if a traveller wishes to replenish his spirit flask in these times he must purchase a complete reputed quart of the fluid, load his "pocket pistol" with it, and either convey the balance away in the original bottle or leave it on the counter for the benefit of the next comer.

There is room for an inventive brain to devise a quart flask which can be carried incognito. There seem to be possibilities in a curved metal vessel made on the lines of a dress cigarette case, but of large size. This could be worn across the chest, and if it were made of the proper heat-treated steel it would serve as a very excellent bullet-proof shield. Aviators, and others, please note!

Blades of Grass

The men at the Front are making their maximum effort, spending their energy, health and lives for the cause. Are we who are occupied in Aeroplane Manufacture and similar work, putting our best into the struggle? Are we doing our utmost to get the maximum results from our plant, our staffs and our organisation? Such questions demand an answer. We must

NOW LET EVERYTHING GO IN

The rewards for maximum efforts at the Front are Victoria Crosses, medals and promotions, and a share in the glory of the ultimate success. To us at home the reward for maximum efforts will be increased personal fitness to cope with business problems, an improved and smooth working organisation, a competent and well-trained staff, and the satisfaction of good work well done. There is also the question of financial profit, but to a man who becomes really interested in his work, profit is only the indication of success, not the end of his ambition.

ARE YOU MAKING THIS MAXIMUM EFFORT?

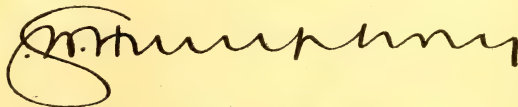
Are you only making one aeroplane a week, where, by a little trouble, a little re-organisation, a little "getting in touch" with the right quarter, you could make two? It might mean extra work, longer hours for you, but isn't it worth while? Dean Swift said: "Whoever could make two blades of grass to grow on a spot where only one grew before, would do more essential service to his country than the whole race of politicians put together."

TURN "BLADES OF GRASS" INTO AEROPLANES

and this quotation hits off the present position exactly.

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FROM DENMARK.

THE AEROPLANE'S Danish correspondent writes :—

Concerning Italy, the war correspondent Leonhard Adelt writes to the "Berliner Tageblatt" from the Imperial and Royal war press quarters on July 11th :—"On the road to Monfalcone an automobile approached, Hussars galloping in front of it, all looking upwards. When our car stopped to let them pass, the growling of an engine got audible, and the planes of an aeroplane stood above our heads, small and high. Through our telescope we observed the two pointed war bows, betraying the Italian nationality. We could see the hussars and the automobile no more, but three gunshots followed quick on, and little shrapnel clouds danced round the foreign bird. After the third shot it started swinging, nose-dived, and plunged in *vol piqué* behind Monfalcone.

"Later we saw a field gun render anti-aircraft service. One aviator had already been shot, who still tried to save his life in a steep glide, but on approaching the ground he was received with a rain of shells. A hostile monoplane circled at an altitude of 2,000 metres over the height plateau by Doberdo. In my telescope I recognised it is a French Morane-Saulnier monoplane.

"When we passed through Dornberg another aviator dropped a bomb on the guardian house by the road; it felt by the feet of two postmen from Triest, without doing any harm. The Italian was 1,800 metres up, piloting a French Maurice Farman biplane, with a machine-gun mounted in front. An Austrian aviator on a German Albatros biplane rose to his pursuit, the Italian avoiding the engagement by rising in circles and going off without making use of his machine-gun.

"During our drive along the front Triest was once bombarded. Once was even announced an aeroplane of unusual size, though I was unable of gathering further information. A rumour current among the soldiers tells it to have a crew of five men, perhaps the aeroplane is hereby mistaken with an airship. Of the Italian airships, 'Citta di Ferrara' was the best; it was the third, built by Engineer Forlanini [The 'Citta di Ferrara' was not a Forlanini.—Ed.] and Captain Dal Falero, by public means, and correspondences with the design of the German Veeh airship, the unfortunate trial voyages of which I took part in at that time.

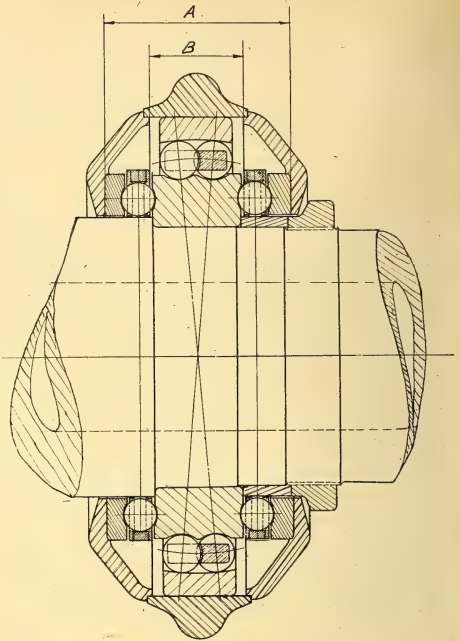
"Since the destroying of 'Citta di Ferrara' by the Austrian-Hungarian Lévêque Naval seaplane "L.48," only one big hostile airship appeared several times in the nights above the height plateau of Doberdo and bombarded especial the ordnance position of the Imperial Royal troops on the heights by Sagroda. According to the description, which the officers gave to me, the case was of the middle type of the Italian military authorities half-rigid airships of 12,000 m³ capacity, equipped with Fiat engines, each of 250 h.p. The designers are the Captains Crocco and Riccaldoni. I received no report of the war service of the 4,700 m³. Piccolo type and the Parseval airships of 10,000 m³. capacity, delivered from Bitterfeld. [Probably the envelopes were from Bitterfeld.—Ed.]

AEROPLANE BEARINGS.

The question of reliable bearings able to deal efficiently with the high duty of the aeroplane becomes of greater importance every day. We find in the design of the plain or the sliding type of bearings systems of forced lubrication are necessary to meet the heavy duty. This gives us a very appreciable increase in weight both as regards design and lubricant to be carried. The alternative is the ball-bearing, the advantages being as under.

(a) When the design is suitable for the application the highest known efficiency is obtained. The co-efficient of friction being 0.0012 considered in relation to the shaft diameter.

(b) When not over-loaded it is practically free from wear, since wear only takes place where surfaces rub



against one another. The ball-bearing aims at substituting rolling for sliding. Anxiety regarding lubrication becomes non-existent, since there is no lubrication difficulty: the housing being filled with lubricant which should have no means of escaping. It is, however, necessary to clean the housing out and fill with new lubricant occasionally.

(c) The difficulties arising from slack bearings are also non-existent.

(e) When the design is suitable the weight of the ball bearing and its housing should be considerably less than that of the plain bearing. This, however, does not apply to all applications.

(f) Where there is gearing the efficiency is not lowered as is very often the case with plain bearings.

(g) The shaft diameters can be considered independently of bearing requirements. This is because the ball-bearing can be designed for light, medium, heavy, or extra heavy duty; the shaft diameter remaining constant.

(h) Assembly is a straightforward proceeding due to the accuracy of the ball-bearing.

(i) Seizing of bearings is impossible because no surface rubbing takes place.

As an example of ball-bearing design a plan is shown for an aeroplane propeller shaft.

The figure shows a combination radial and thrust bearing suitable for this duty. As will be seen, the inner race of the radial bearing acts also as the thrust race, which saves the weight of two thrust races.

The distance (A) between the seatings must be accurate and not be too large, as this tends to make the balls spin badly, and when allowed this causes the smooth surface of the race path to be destroyed. This tendency to spin is caused chiefly by the centrifugal force of the balls and cannot be allowed to become excessive.

Besides accurate adjustment, a specially designed enlarged section outside cage for the thrust duty is advisable. The distance (B) is such that a clearance is obtained on each side of the outer race of the radial bearing and

SPERRY Gyroscopic Stabilizer

in use on Machines of the British,
French, Russian, and Italian Govts.

It incorporates a horizontal reference plane of accuracy and integrity to which all angles can be referred.

It is a reliable mechanical pilot of never-failing accuracy, capable of correcting disturbances at their inception.

It relieves the pilot of nervous and physical fatigue incident to flying, allowing him to make those observations for which an observer has hitherto been required.

It, unlike the pilot, is unaffected by fog or darkness.

It permits the selection of an aeroplane with the highest efficiency in speed and climbing capacity without regard to other factors.

It renders the aeroplane a platform which is not only steady, but is held in constant relation to the horizontal.

For these reasons it is the logical accessory to every military aeroplane.

THE SPERRY GYROSCOPE
COMPANY, LTD.,

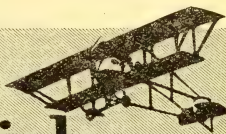
15, Victoria Street, London,
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Telegrams—
Inland: Sperryco, Vic, London.
Foreign: Sperryco, London.

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enter into the manufacture or finish of most War work that Engineers, Builders and like constructional firms are undertaking at the present time

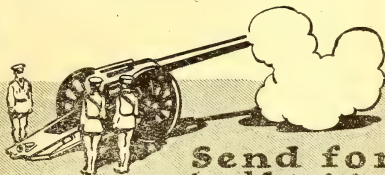
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specialise in the manufacture of non-poisonous War materials in the Standard shades and approved qualities to meet the requirements of Government contractors, and can give prompt deliveries in any quantities

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booklet giving
full particulars
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permits them any necessary movement in the housing. This prevents the balls of the radial bearing from being overloaded.

The contour of the housing is made suitable for attachment to the framework; care, however, is necessary in the design, the aim being to obtain that section which will give the greatest resistance to deformation, so that the bore of the housing remains as truly circular as possible.

With the increased development the aeroplane ball-bearings become the only means of meeting this increased duty.—T. E. C. H.

ANOTHER DOPE CASE.

An inquest was held at Teddington on December 4th on Charles Selwood, 6r, a decorator, of Walpole Road. Dr. Legg, inspector of the Home Office, said death was due to the use of "dope," used in varnishing the wings of aeroplanes. The injurious ingredient of dope was tetrachlorethane, which caused jaundice. Deceased's death was due to inhaling the vapour of tetrachlorethane. It was not until the war began that dope had been used in very great quantities. Many men were affected with it last year.

Witness added: "I strongly advised that men should not be worked continuously on these substances, and that those who worked on them should be periodically examined by a doctor." A verdict of "Accidental death from poisonous fumes" was returned.

A DRIFT INDICATOR.

The following letter has been received:—

Dear Sir,—We see in the last edition of *THE AEROPLANE* an article on the "Sperry Drift Estimator," and also the fact in another part of your paper that this is being used on the Curtiss machines.

As far as we can judge from the information given in the article, the fundamental principles are similar, although in detail our instrument, viz., "The Sage-Feary Range Finder, Drift Estimator and Land Speed Indicator," is apparently far in advance.

We claim, among other points, that we obtain extreme accuracy in the dropping of bombs of any type, under any conditions, and from any height, thus obviating any risk of damage to the "raiding aeroplane" from enemy guns.

The calculations are entirely automatic and do not necessitate any calculations on the part of the pilot or the observer, and, moreover, the setting of the observer's instrument automatically sets the instrument in the pilot's cockpit, and always indicates his correct course. Drift indicating and land speed indicating are obviously an integral part of the apparatus.

Yours faithfully, Fredk. Sage and Co., Ltd.

(Signed) G. W. COULSON,
General Manager.

A TABLOID BOOKLET.

Among the hardy annuals which the war has not succeeded in suppressing is the "Wellcome Photographic Exposure Record and Diary." This attractive pocket-book, which has been produced by Messrs. Burroughs Wellcome & Co. for a number of years, is well worth its price of 1s. to every amateur photographer, for, as well as containing a great deal of information on the subject of photographic chemicals and their properties, it provides a convenient means of recording a year's exposures for future reference. In a science which demands so much experience as photography does, the only road to success is a careful analysis of past failures as a check on present endeavours, and this, of course, can only be done by keeping a record of the conditions under which each negative is made. A daily diary is also incorporated in the book.

One of the most interesting features is an exposure calculator which indicates the correct exposure for any make and speed of plate, at any time of the year, at any time of the day, under any given lighting conditions, and using any given lens aperture.

In these times, when a Christmas card of the pre-war kind would merely suggest ironical blasphemy, one ventures to suggest that these diaries would make a very suitable substitute to send to friends who are photographers. The diaries can be obtained at most photographic stores, or direct from Messrs. Burroughs Wellcome & Co., Snow Hill Buildings, E.C.

NOTA-BENE.

Aeroplane constructors will do well to note that the Apollo Manufacturing Co., of Moseley Street, Birmingham, wholesale manufacturers of motor accessories, are prepared to consider the manufacture of metal fittings, wind-screens, etc., for aeroplanes to specification.

The Apollo Mfg. Co. are well equipped with up-to-date metal working machinery, and the nature of their previous experience makes them competent to undertake aeroplane work.

NEW L. AND P. PRODUCTS.

It is of interest to note that the London and Provincial Aviation Co. have just finished two machines which they have been building for the Bournemouth Aviation Co.; these are both passenger-carrying machines, one a 45 h.p. and the other a 60 h.p. They have both been tested by the L. and P. Co., and the trials proved entirely satisfactory. The 60 h.p. was flown on November 30th in a bad wind of 30 miles per hour, and the pilot, Mr. M. G. Smiles, had no difficulty in reaching an altitude of 2,000 ft. with a passenger.

The firm hopes to deliver very shortly to the same company two more machines, one a 35 h.p. and the other a 40 h.p. The former is nearly completed, and unless anything unforeseen occurs it should be ready in a fortnight. It should be noted that the Bournemouth Aviation Company is located at Talbot Village, Bournemouth, a very pleasing district in which to carry on school work during the winter.

On the Merits of Advertising

The following letter will be of interest to all concerned in the Aircraft Industry:—

Banks:
PARR'S BANK, LTD.

Telegrams and Cables:
NUMEARPHON. LONDON.
Telephone: REGENT 5765.

THE MEARS EAR PHONE CO. (LONDON) LTD.

Manufacturers and Patentees of

THE MEARS 8-TONE EAR PHONE AND THE MEARS AUNASAGE.

HEAD OFFICE

ST. GEORGE'S HOUSE, 193-197, REGENT STREET, LONDON, W.

1st December, 1915.

The Editor, "The Aeroplane,"

166, Piccadilly, London, W.

Dear Sir,—On looking through our advertising records I have been very pleased to find that the results which we have obtained from the advertisements you have been running for us pertaining to our Aerophone have far exceeded my expectations.

No doubt you will remember my first interview with you as regards the insertion of the ad., and will recall that I was somewhat sceptical as to results owing to the fact of the Aerophone being an entirely new instrument introduced on the market. Our advertising records show that "The Aeroplane" has been most successful in introducing the Aerophone in a very large field.

I have before me letters from the Flying Section of the Royal Norwegian Navy, letters from the Aeronautical Departments of the Italian and English Governments, the latter being from both the Admiralty and the War Office, as well as many letters from aviators on active service in France and the Dardanelles, and from individuals at all of the principal army and navy stations in this country. In each case mention is made of having seen the advertisement in "The Aeroplane." I am very pleased with the results, and am certain that there is a great demand for our instrument and am convinced as to the value of "The Aeroplane" as an advertising medium.

We beg to remain,

Yours faithfully,

THE MEARS EAR PHONE CO. (LONDON) LTD.,

bk/LGH (Signed) L. G. HAMMER, Managing Director.



AVIATION JACKET

In Black or Tan, Chrome dressed, three-quarter length, lined fleece. **£6 60**
As supplied to many Aviators at the Front

PATTERNS ON REQUEST

Our self-measurement form ensures a perfect fit

AVIATORS' CLOTHING

OF EVERY DESCRIPTION



FURAVIATION CAP

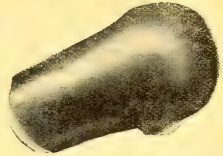
With soft Brown or Black Fur Peak or Curtain.

Lined Silk.. **37/6**

„ Chamois **40/-**

Attachable throat and chin protection for fitting to cap—Leather lined chamois, **6/6**

Leather lined fur, **7/6**



CONTROL ROD MUFF

The only perfect protection made for the hands while in the air.

In leather, cloth, lined sheepskin.

Price **18/6** per pair.

WRITE FOR CATALOGUE

"WHAT EVERY OFFICER WANTS"

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MANCHESTER: 90-92, Cross St.

GLASGOW: 72, St. Vincent St.

- THE -

ENGINEERING TIMBER CO. Ltd.

9, Victoria Street, London, S.W.

J. B. HUBON, Managing Director.

Telephone 5073 Victoria.

SILVER SPRUCE

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French Agency,

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PARIS.

Phone 04.77 Nord.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

THE RECENT HENDON ACCIDENT.

The proprietor of the Mann twin-propeller biplane requests that the following letter from the passenger in the machine at the time of its accident be published:—

"As the passenger in the Mann biplane on the occasion of the accident on November 16th, I should like to deny a report that has been circulated to the effect that the machine got into an uncontrollable spin as soon as the chain broke. There was no perceptible shock or swerve, the chain flew straight out between the outside struts without touching anything, and the vol plané was quite devoid of any untoward accident. There was no 'lob-sided descent,' no 'thrilling downward course,' no 'trying circumstances,' no 'amazing escape,' and no shock was sustained by Bairs or myself.

"The accounts of the accident that have appeared in the daily Press are very misleading, and the various irresponsible aerodrome reports equally so. I am convinced that, but for the vertical current that drove us down almost at the moment of landing, we should have reached the aerodrome without stretching a wire.

"I am in no way connected with the Mann biplane or the Mann and Grimmer firm.

(Signed) J. GEO. WOODLEY.

"Northolt, November 22nd, 1915."

THE WHITEHEAD CO. AND UNIONISM.

The following letter has been received for publication:—

Sir,—While I wish to thank you for your kindness in mentioning the work done by my Company in THE AEROPLANE and publishing our photograph, I am afraid, however, that I must have somewhat unintentionally misled you regarding the matter of the possibility of any walking delegate of a Union feeling inclined to meddle with my employees.

What I had really intended to convey was, in its true meaning, exactly the reverse. I meant, and in this matter I was speaking for and on behalf of the employees, that there was *nothing* for a walking delegate to meddle with; that there were a number of Union men in my shop, and all and every one of them is absolutely satisfied with the treatment they receive, as is proved by the clipping enclosed and the post-card photograph of these very men entertaining me at a banquet given at the Castle Hotel, Richmond.

You see I do not wish to beg the question, either for the men whom I am glad to have in my employ or others. I merely take the stand that the employees are human beings, and in order to make for efficiency it is just as necessary for me to look after the men's welfare, mental and physical, as it is for them to oil my machinery. I find that, while I am just and fair to the men and anticipate their reasonable requests, they, as a rule do not abuse their privileges and have not the desire to take a yard when I give them an inch; on the contrary, they all co-operate together to do their best for me in return for my trying to do my best for them.—(Signed) J. A. WHITEHEAD.

[A thoroughly excellent principle which is always appreciated by intelligent workers.—Ed.]

THE WEEK-END AT HENDON.

Last Saturday was one of those days which are at once the despair of school proprietors who are in a hurry to get their pupils through the course of training, and the delight of the over-worked and sometimes under-paid instructors, who welcome a bad day when no school work is possible, so that they may eat, drink, and generally make merry in the West End. It rained and blew, and very nearly snowed.

On Sunday there was a slight improvement. Several flights were made on G.-W. biplanes by Messrs. Manton, Winter, Osipenko and Pashley, and Mr. Kenworthy was

out on a Beatty-Wright. Two passengers faced the elements, and a little school work was accomplished, but not much.

To sum it all up, there was little to write home about, or to communicate to the pages of THE AEROPLANE, which will account for the brevity of this note.—D. W. T.

SCHOOL AND WEATHER REPORTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Wet	Wet	Wet	Fine	Wet	Wet	Fine
London District	Wet	Wet	Wet	Fair	Wet	Wet	Fair
Lake District ...	Fog & Wet	Foggy	Wet Windy	Calm	Wet	Windy	Wet Windy

HENDON.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Inst. on machine: Prob. Flight Sub-Lieuts. Aitkin, Cuckney, Armitage, and Rampling.

Circuits with Inst.: Prob. Flight Sub-Lieuts. Aird, Horniman, and Owens.

Figures of eight or circuits alone: Prob. Flight Sub-Lieuts. Malet, Moody, and Saint.

Machines in use: Grahame-White biplanes.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Inst. on machine: Messrs. Halet, Leigh, Matthews, Smith, Verguill, Henshaw, and Forrest.

Circuits with Inst.: Messrs. Howe and Phillippi.

Figures of eight or circuits alone: Messrs. Gammon and Hughes.

Eights with Inst.: Mr. Yates.

Certificate taken during week by Mr. Horridge.

Machines in use: Grahame-White biplanes.

AN OPENING.

Well-established engineering firm, now extending into the aircraft industry, has a vacancy for an aeronautical director.—Apply, "Director," c/o THE AEROPLANE, 166, Piccadilly, W.

ON ANOTHER PAGE

we have an advertisement on

BLADES OF GRASS

Read it—it is unusual—some of our candid critics have said "it is silly," "it lacks punch," "it isn't business," "it's sermonising." It may be—but it will make you think, and if it does that, we are—well, we

TAKE LONG VIEWS

Fairby Construction Co., Ltd.

117 Victoria Street

London, S.W.

NOTICE

To Aeroplane Manufacturers


MR. SYDNEY PICKLES begs to announce that, having arranged with MR. CLIFFORD B. PRODGER to assist him in carrying through Government Tests of Aeroplanes, he is now at liberty to undertake further contracts for the testing of all types of aeroplanes, whether on land or sea.

Enquiries should be addressed to :

OFFICE,
LONDON AERODROME,
HENDON, N.W.

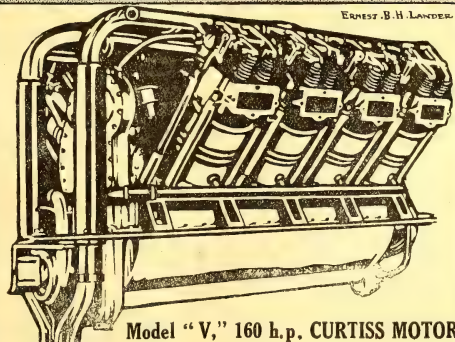
PRIVATE ADDRESS,
13, BELSIZE PARK GARDENS,
HAMPSTEAD.

Phone: 3817 Hampstead.



In Daily Service these motors need 50 per cent. less attention than any other standard motors. A general overhaul every thirty-five to fifty hours.

CURTISS MOTOR CO.
Hammondsport, N.Y.,
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ERNEST B. H. LONDER

Model "V," 160 h.p. CURTISS MOTOR

Special Mechanics are not demanded by Curtiss Motors; anyone familiar with automobile motors can keep Curtiss Motors in first-class condition.

General Representative:
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TEL.: CITY 7724.

KINDLY MENTION "THE AÉROPLANE" WHEN CORRESPONDING WITH ADVERTISERS

AT THE RUFFY-BAUMANN SCHOOL.

Instructors: Messrs. Ed. Baumann, Felix Ruffy, Ami Baumann and Clarence Winchester.

Pupils with Instructor: Messrs. Pauli, Hamtiaux, Hoskyn, Cox, Dobson, Nield, Laidlaw, Cuthbertson and Vernon.

Pupils doing straights or rolling alone: Messrs. Cole, Vernon, De Grauw, Coppens, Griffith, Bolton, Lanoiti, Sherwood and Thomson.

Pupils doing eights or circuits alone: Messrs. Bernard Sherwood, C. de Grauw and Willy Coppens.

Certificates were taken during the week by Messrs. Bernard Sherwood, Charles de Grauw and Willy Coppens.

Machines in use: 60 and 50 h.p. Caudron-type biplanes, dual control.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, C. Jacques, H. Sykes, and W. T. Warren, jun.

Pupils doing straights or rolling alone: Messrs. Van Roggen, Roberts, Medaets, Egelstaff, Lees, Hardy, Loomes, Lambert, and Jones, rolling; Messrs. Atkinson, Hunt, Heyn, Martin, Woods, Thorp, and Burton, straights.

Pupil doing figures of eight and circuits alone: Mr. Burgess.

Machines in use: Four L. and P. tractor biplanes.

AT THE BEATTY SCHOOL.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King.

Pupils out during the week: Messrs. Baker, Barnes, Barrow, Begg, Bowick, Branford, Byrne, Collett, Collier, Cumming, Davidson, de Harden Jones, Drysdale, Edwards, Fellowes, Gayner, Godfrey, Hodgson, Kirkwood, Martin, Onley, Overton, Patterson, Podmore, Richard, Sainter, Schollaert, Thompson, Whincup, Williams, Willmet.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes; Caudron tractor biplanes.

Exhibition flights were given on Sunday

AT THE HALL FLYING SCHOOL.

Week ending Nov. 28th.—(Delayed in transit.)

The following pupils received instruction at the Hall School:—With Mr. H. F. Stevens: Mr. Drew, putting in long practice flights, circles, eights and volplane landings.

With Mr. Cecil M. Hill: Manley, Wilkins, Cooke, Evans, Rattray, Dresser, Shum, Butterworth, Nicolle, Dodd, Stirling, Mann, Capt. Grey, Redford.

With Mr. Drew: Doing rolling practice and short flights: Messrs. Cumberbirch, Arnsby, Wooley, Ormerod, Smith, Millburn, Cosgrave, Chapman, Thom, Bennett, Niel, Robert, Lieut. Cooke, Ridley, Ackroyd, Moir.

Three new Hall tractors are now in course of construction, which, with the machines already in use, should make the Hall School the largest and best-equipped tractor school in England.

Mr. Drew has joined the staff as instructor upon completion of his certificate tests.

Week ending Sunday, December 5th:—

The following pupils were out receiving instruction:—With H. F. Stevens: Wilkins, Rattray, and Manley, doing circuits or figure eights and landing practice alone. Wilkins and Rattray about ready to qualify for certificates.

With C. M. Hill: Capt. Grey, Butterworth, Redford, Stirling, Evans, Cooke, Nicolle, Dresser, Mann, Shum, Sepulchre, Manley.

With J. Drew: Cumberbirch, Arnsby, Wooley, Ormerod, Millburn, Cosgrave, Chapman, Niel, Baron Ackroyd, Le Coq Moir, Robert, Ridley, Lieut. Cooke, Collins.

The British Caudron Co. have just supplied the Hall School with one of their latest Government type two-seater tractors, which should prove a useful asset to the School.

Machines in use: Hall and Caudron tractor biplanes. The Hall School have the pleasure of announcing that they have secured the services of Anstey Chave (who has had considerable flying experience in the R.N.A.S.) as an additional instructor.

WINDERMERE.**AT THE N.A.C. SEAPLANE SCHOOL.**

Report for week ending November 28th.—(Delayed in transit.)

Instructors during week: Messrs. W. Rowland Ding and J. Lankester Parker.

Pupils with Instructor on machine: Messrs. Hallet (16), H. Ingham (13), Part (5), Ruthven (12), Robertson (17), Satton (18) and Stubbs (39).

With Instructor as passenger: Messrs. Coats (12) and Part (16).

Machines in use: N.A.C. 80 Gnome pusher biplane, Blackburn 100 Anzani monoplane.

Report for week ending December 5th.

Instructors for the week: Messrs. W. Rowland Ding and J. Lankester Parker.

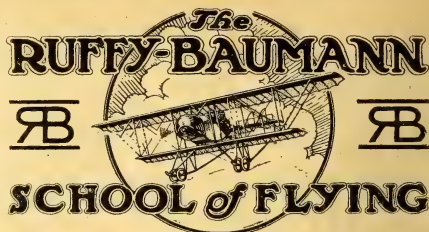
Pupils with Inst. on machine: Messrs. Benson (6), Coats (10), Ingham (12), Macintyre (7), Salton (6), Stubbs (14).

With Inst. as pass.: Messrs. Inglis (21), Part (14), Shaw (9).

Figures of eight or circuits alone: Messrs. Coats (9), Reid (22), Robertson (6).

Mr. H. P. Reid finished second series of 8's for certificate.

Machines in use: N.A.C. 80 Gnome propeller biplane; Blackburn 100 Anzani monoplane.



LONDON AERODROME, HENDON

N.W.

Phone—151 Kingsbury

IF YOU

are looking for a really reliable school which is backed up by a sound reputation for

EFFICIENCY

your quest can end here and now

WRITE TO US

FOR FULL DETAILS

. OF OUR COURSE .

Instructors:

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Machines:

ONE 60 H.P. CAUDRON TYPE BIPLANE

THREE 50 H.P. CAUDRON TYPE BIPLANES

OFFICES AND WORKS—

Kendall's Mews, George St., PORTMAN SQ., W.

Phone—5046 Mayfair



TIME FLIES

Xmas will be here and your gifts must be appropriate. Do not leave your orders until the last minute, but

— WRITE THE ACTUAL MAKER AT ONCE —

DAINTY 'JUDGE' JEWELLERY

Ideal for Xmas Gifts, most original for airmen.
Richly Enamelled in Solid Silver and Gold.

"JUDGE," 285 Brearley St. (Hockley) BIRMINGHAM.

SALMSON

AERO-ENGINES

(Canton-Unné System)

All enquiries should be addressed to

THE DUDBRIDGE IRON WORKS, LIMITED,

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Telegrams Aeroflight, Vic. London.
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BURBERRY AIRMAN OUTRIGS

Thoroughly workmanlike in design, and made in special Burberry woven and proofed materials, supplies such an abundance of warmth and protection that biting wind and prolonged exposure to the severest weather can be faced without discomfort or risk to health.



Illustrated Catalogue & Patterns Post Free



R.F.C. Uniforms
In Burberry's TENACE WHIPCORD, which will outwear three ordinary uniforms.

Burberry Flying Outrig
Designed by expert aviators, is practical in every detail. Made in Gabardine, lined Camel Flannee or Quilted Eider-down, it supplies a splendid safeguard and is as hard-wearing as leather.

BURBERRYS Haymarket LONDON
also 8 & 10 Boul. Malesherbes, PARIS

"I cannot recommend the material too highly where warmth and comfort are required." —
C. Grahame-White.

The HALL FLYING SCHOOL

(THE AERONAUTICAL UNIVERSITY)

Pupils are trained for all branches of the Government Air Service on **HALL TRACTOR** (Government type) **BIPLANES**. These machines are fitted throughout with standard controls, are **SAFE, SPEEDY**, and well maintained by qualified instructors and a competent staff of assistants.

Write for full particulars to Department "A"

The Hall School of Flying

London Aerodrome . Hendon, N.W.

Kingsbury 142.



KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

"Why should all the women in the world just naturally hate us nurses?" said the White Linen Sister—"oh, get a new head. Wouldn't you, if you had to watch anybody doing things for ten dollars a week and her keep, slick and off-hand and Just Right, that all the achin' love outer heaven couldn't, not if it tried ever so? But that's Us. And knowin' how, of course. And you bet that ain't all. How'd you like to have your bean, down with a first-class typhoid, mother-handled closer than you ever dast think of for shame, by another woman; just as young, and maybe no more homely'n you? Seein' him, hearin' him tell things, in an' outer his senses, just all the hours there was, with you waitin' an' prayin' outside. Or you're his mother that bore him, an' reared an' raised an' worked for, an' built your whole life on him; an' you've gotter beg an' implore some pink-faced chit in a cap an' uniform for just five little minutes' sight of your own child. That's Us again. Then he gets well—which is Us, most times—an' you've gotter feel properly grateful, to another woman. Or, bein' a plain Man, that's never known enough to give himself a chance, he don't. And won't you blame it on Us for evermore? Hate us? Oh no, I reckon not. Why, I wonder they don't give you us right off'n the earth." She knew, that unerring Sister. The expert never is exactly popular with the confident amateur. For instance, although it is her very own, and she is supposed to know by nature, how often do you see the average young mother even carrying her baby properly? Or half as comfortably well as its father generally can, somehow? Or either of them able to bathe, or dress, or do anything for it one-tenth as well as you are taught and made to do, within half an hour of its arrival, if you happen to be a medical student at any practical hospital of that sort. Nevertheless, short of seeing the poor child held nearly upside-down and half-naked, it will be unwise to tell them so. They won't thank you.

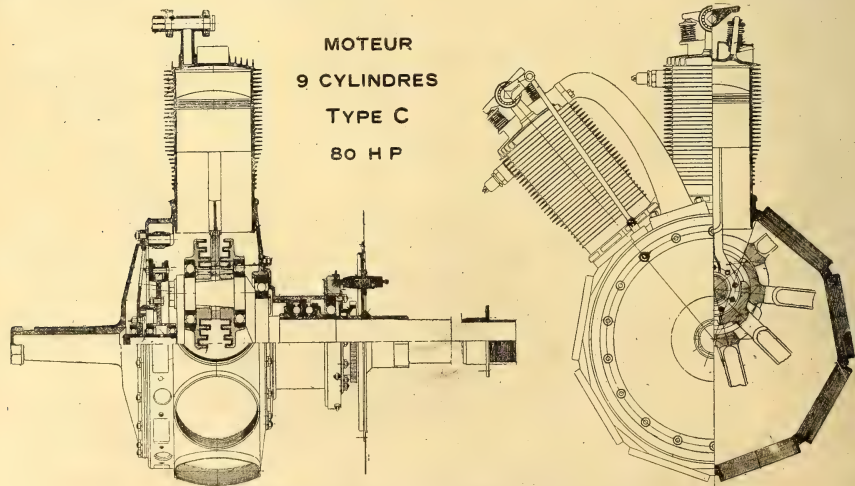
JUST TO BEGIN RIGHT.

Therefore—since the Rhone, as I say, is no child of yours or mine—it seems risky to disagree with the ritual of its management—or *démenagement*—and the order thereof, as prescribed by its own parents. That order, say they, is first the cams and valve-gear generally; secondly, the

cylinders; thirdly, the connecting-rods and pistons—presumably the crank-shaft also, lest we forget—and lastly, if you may believe it, the after-part externals: such as the carburettor, the magneto, and all those accessories which—as one might be excused for supposing—stand such a lot of knocking about, and don't matter much anyway. However, as these details really do happen to be somewhat delicately made and adjusted, and related to the motor; as also, they have something to do with its running—or ruining; and as likewise, they happen to be so mounted on its long steel hinder limb that you could hardly set it tail-down upon the dissembly-cradle without first removing them—well, I really think it would be just as well to begin with them. After all, when you undress a child it is usual to take its shoes off first. And in this case, it is not at all impossible to set the motor on its cradle, beak-shaft down, without allowing the tappet-spindles to touch anything, anywhere. One has the excuse, too, of the rather curious direction of the book itself, to dismount the after-parts last "if they have not been previously dismounted."

AND SO TO CONTINUE.

So it seems easiest common sense to take the book so far as its word—and my own—and begin to take the Rhone down much as you would a Gnome, an Anzani, or any other, first slacking off all petrol and oil connections, then removing the sparking plugs and wiring, fitting a cork in each plug-hole if you are afraid of dirt getting into the cylinders; a useful precaution, anyway. Next, take off the carburettor: then slack off the large open nut that holds on the small flange plate on the shaft-tail. Then likewise run off the second large open nut that secures the circular-sleeved carrier plate on which the oil pump, the magneto and their two pinions, and the secondary plug are mounted. Having already disconnected the main oil-fed pipe—which you will recollect is inserted in the angle of the plate and its sleeve—the plate and all its parts can be slid off the shaft as soon as the keys are removed. You do not need to make any guide-marks for the re-assembly in this case, because you have only to make the oil-hole in the angle register with its continuation-hole in the shaft: so fitting in any little piece of metal of the same size will bring this position true. You need not apprehend any difficulty either with the subsequent relation of the



Part Sectional Diagram of the 9-cylinder 80-h.p. Le Rhône.

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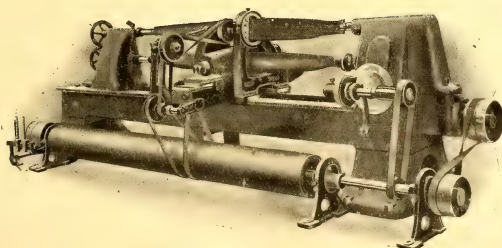
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secondary plug to the ignition distributor-plate endwise, as the plug itself adjusts; the open nut on the carrier-plate sleeve being more of a keeper than anything else.

Next, run out the fourteen screw-bolts that attach the casing of the treble after-bearing to the back of the crank-chamber; when—since this casing not only contains the thrust and other ball-races, but carries the distributor-plate and the driving gear for the oil pump, and magneto—all these parts come away in one piece, slid off the shaft. Having next picked the main oil-delivery tube out of the hollow of the shaft, the latter is clear at last, and the motor may now be reversed on the cradle, back-end upwards. It being as well at the same time to plug up the end of the shaft lest any dirt should work into it. The back of the crank-chamber—at least so much of it as encloses the main rear-ball race—being, however, already removed, and with it all that supports the crank-shaft, care should be taken to place a wooden slat across the cradle so as to bear under the side of the ball race and so take all the crank-shaft weight, relieving all side-strain that might otherwise be imposed on the connecting-rod attachment.

Now, to proceed with the valve-gear dismounting—secondly instead of first—run out the screw-bolts—practically corresponding to those at the back—which attach the plate of the beak-shaft—over the cover-plate or casing of the valve-gear—to the crank-chamber casting. This part removed, run off the nut on the end of the stub or front extension of the crank—the “finger” on which the driving pinion and its ball-bearing are mounted. This enables these latter to be presently withdrawn. Now, with the special tool provided for the purpose—No. 0325 in the outfit—pull out the pins on which the lower valve-rockers are pivoted. These will now drop freely, of course bringing with them the big ends of the tappet-spindles as well as their own rollers.

Next withdraw the roller bearing of the valve-gear driving pinion from the stub, having first made the only necessary guide marks, i.e., one on the face of the top-tooth, and similar marks on the two adjacent teeth of the internally-toothed ring. Which done, lift out the entire block of the two cams, with their carrying disc-plate, the said toothed ring, and the ball-bearings on which the gear runs. Finally, having slipped from their grooves each of the little check rings that hold the tappet-spindle heads in place, detach the crank-arms of the valve rockers. Then having detached the tappet-spindle heads, and if you intend immediate valve-examination, pull out also the pivot-pins of the rockers: after which the cylinders can be dismounted.

This can, of course, be done independently of any valve-gear dismounting, at any time, no matter whether the motor itself is mounted in the aeroplane or not. Only, in the case of the seven-cylinder model and its duplicate, care must be taken not to try to take off No. 1 cylinder when it is in the vertical position, but only when it is at least somewhere near horizontal. The mere dismounting is simple enough: as one has simply to run the locking rings up the barrels—having previously dismounted the induction pipings—and then to rotate each cylinder until it comes away. The only extra safeguard necessary is to have the cylinder project over a table as it comes free to avoid straining the thread at the entry, or any risk of a fall.

On the other hand, to disconnect the connecting rods, the two previous dismountings must be gone through. For this, to get the master-rod away—in the seven-cylinder model—run out the four cotter-bolts from its foot. Then run out all the big grub-screws that unite the two halves of the drum, and pull out the front half thereof when, of course, the shoes of the other six rods will lift clear of the back half; and with the rods the pistons as well. In the nine-cylinder model, one has merely to run out the afore-said uniting grub-screws. But in either case, to do this, one has to run out—or off—the locking screw that is inserted in the upper face of the front web, as a kind of final,

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but not wholly essential, bond of the conventional wedlock of the male and female parts of the crank-pin. This removed, their divorce may proceed, and the female part, web and all, may be lifted clear, in order to get rid of the master-grip which, with all its connecting-rods and pistons still attached, is left lying loosely upon the male member, like so many "in-laws" after the decree nisi. Now one would like to disregard the book-directions, and gather up the whole family as one, Salmson fashion, to place them on a table or tarpaulin for further separation, thus escaping the almost certain dropping of one or other rod, piston and all, as soon as the halves of the grip are separated. But the one-piece formation of the crank-chamber body forbids; so, when getting out the grub-screws, leave the last one to be run out with your right-hand, while you hold the upper half of the grip with your left. Then as you pick off the upper half, quickly run your right hand upon the connecting-rod shoes, holding them firmly in the grooves of the lower half of the grip. Then with your free left hand you can grip each rod in turn, and lift it clear through the cylinder insertion. Don't change hands! Lastly, finally to empty the crank-chamber, the male member and the rest of the crank-shaft—being in one piece, of course—can come out; together with the after-roller bearing, the inner race of which is

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Now, to detach the pistons from the rods, one has only to run out the two little locking-screws from each gudgeon, and withdraw its tapered pin with the prescribed tool No. 0316, or any other that will do the job as well. The book here says, shift the piston-rings. I say don't; unless you wish to pay for new ones. This kind goeth not about its pistons after the fashion of earth wheeling, but is in the way of fine jewellery as well as usefulness. So it is enough to let any dirt soak loose in the limewater or caustic-soda bath, with a final drenching in muled kerosene. Finally, to get the valves out, run the nuts off the rocker-pivot-bolts, pull off each rocker with its ball-bearings, and detach the valves from the stems in the usual way, but reaching your hand into the cylinder to catch each valve as it drops free. Again it comes home to you that the cylinder must come away in order to grind any valve; but this defect perhaps has the one quality of leaving no excuse for not giving the cylinder a good sluicing with kerosene—with a final splash of petrol to dry off—in order to wash out the last particle of grinding-stuff or carbon.

(To be continued.)

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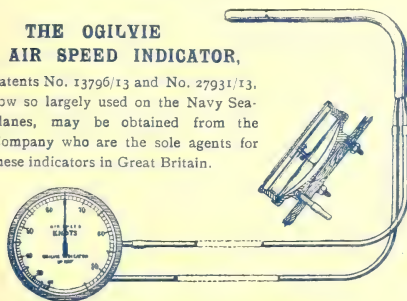
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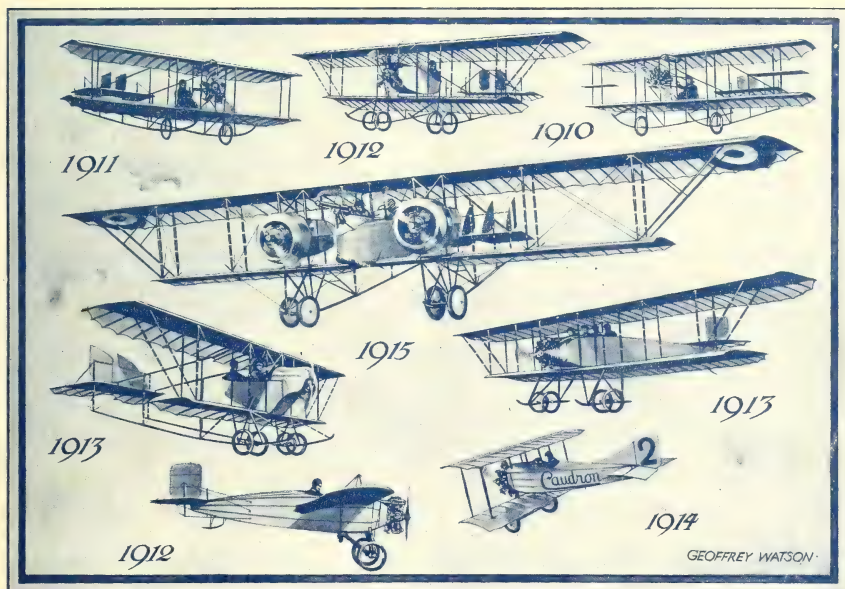
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ON AMERICAN MILITARY AERONAUTICS.

When America starts to organise her Bureau of Military Aeronautics she can learn a great deal from Europe if she cares to investigate. Probably her representatives in Germany know more than I do about the German Flying Services, and so can supply much valuable detailed information about what to imitate. The fact that Germany's Military aviators do not hold the prominent position in their own sphere that is held by the rest of the German Army is due to lack of quality in her pilots, and not to faulty organisation, or supply or design.

In the air, for the time being at any rate, the individual scores on his own merits. Mass does not yet count for much. The German has always scored in mass fighting. He has always been a fighting tribesman, not a freebooter, nor a filibuster, nor a pirate captain. In the Anglo-French wars both sides turned out numbers of privateer ships, in each of which success depended on one man. The German has never favoured the lone-hand raid, and to-day his successful submarine captains are not true Germans but Norsemen, either of Danish, Swedish, or Norwegian extraction, from the Baltic or North Sea Provinces of Germany.

Therefore, organisation is the German's strongest point, just as it is the Britisher's weakest. The Frenchman makes up in ingenuity what he lacks in pure method, so despite second-rate organisation he gets things done when the Britisher does not.

Now, the American Army has the opportunity of copying the high excellence of German organisation, and of improving it by the addition of sundry good points which can be discovered if sufficient care is taken in studying the methods of the French and British flying corps. If the U.S. Army Department sets about the job properly I can see the American attachés in Europe being pretty busy for the next year or two, for they will have a lot of study ahead.

SOME POINTS TO NOTE.

If they cannot immediately discern the good things to be copied it is not difficult to point out the things to avoid. Mr. Kipling, in his priceless story, "The Captive," tells us how when the American inventor, Mr. Laughton O. Zigler, wanted to give his automatic gun a fair show about the period of the Boer War, he allowed that it was no use taking it to the U.S. Army, because that was run by the nephews of politicians, and it was no use taking it to the "Royal British Army," as he called it, because that was run by the nephews of lords, so he took it to the Boers. I cannot speak for the U.S. Army of to-day, but as for the British Army, I fear that since South Africa the "nephews of politicians," and politicians themselves, have ousted the "nephews of lords"—most of whom have died in the past twelve months leading their men like the gallant gentlemen they were, despite their unbusinesslike ways—and, where soldiers are concerned, a gentleman with-

out a superfluity of brains is a better leader than the cleverest politician who ever misled a constituency.

Therefore, if the U.S. Army wants its Flying Corps to be a success let it insist on having it run by professional soldiers, and not by people with political pull. It will be well to consider having an Army aeroplane workshop for experimental purposes, but if the U.S. Army decides to establish an American Republican Aircraft Factory, let it be kept clear of Irish-American politicians, New York Jew motor-mongers, and the sweepings of automobile factories. Put a soldier in control.

Give the American aeroplane manufacturer a square deal. Encourage him to produce the best stuff—and the best only. Tell him kindly but firmly if he is wrong, but do not let officials jeer at him, and sneer because they draw things on paper—invariably wrong—while he merely makes them fly.

The Republican Aircraft Factory should produce valuable experimental results, and the results of those experiments should be communicated to manufacturers in order to improve the breed of their aeroplanes. Also, if properly run the American R.A.F. may be useful as a check on the cost of production of aeroplanes, and thus manufacturers may be prevented from charging exorbitant prices and making unfair profits out of the tax-payer.

Every effort should be made to prevent the American R.A.F. from becoming a home of rest for the protégés of officials, in which Government money is spent on friends of managers and foremen who spend their days—and nights, at overtime rates—in dodging work. This form of graft is more wasteful and more injurious than the system which I am credibly informed does exist in America, under which grafting is winked at so long as a man delivers the goods. In certain cases in Europe, of which I know too many for my peace of mind, the grafting goes on but the goods are not delivered.

Give the American manufacturer a square deal, as I have said, and he will deliver the goods without grafting, so as one would notice it anyway, but if any political wire-puller gets across him, or between him and the plain honest soldier who runs Army Aviation, my money is on the business man all the time—and the Army will suffer for it in the end. So keep the politicians and commission-dealers out.

ON PICKING PILOTS.

When it comes to finding pilots for U.S. Army aeroplanes the Aviation Bureau is up against a big proposition. When the States get mixed up in a first-class war, as they will do some day, it will be no use the Army Department thinking they can start in with about fifty aviators, as was the case with the British Army in the war with Germany. Five hundred aviators will be too few, and five thousand will be none too many. Therefore, get right away from the foolish English idea that

to pilot an aeroplane a man must be an officer. Also, beware of the still more foolish English notion, that if you take an assistant out of a retail store and put him into an officer's uniform he thereupon becomes an officer and a gentleman, and is more fitted to be an aeroplane pilot than a non-commissioned officer or a mechanic who has worked on aeroplanes for years, and has flown more aeroplanes than his new officer has ever seen.

Give the non-commissioned man a chance to fly, and he will show that he can do it. Only when selecting your N.C.O.s for training as pilots do not pick them because of their good behaviour. The civil, respectful, orderly, stolid type of man who becomes a regimental sergeant-major of the old sort, or the clever business-like man who becomes a canteen-sergeant, with much profit to himself, is never likely to make a flier. Pick the pilots from the "bad hats" of the Army, merely seeing that their bad records arise from exuberance of spirits and not from any serious vice. Put these men on aeroplanes, to fly or break their silly necks as may please them best. Then you will get pilots of the right sort from among the enlisted men of the Army, and if they do not like being just plain privates give them warrant rank, without executive or disciplinary power.

USE HORSEMEN.

Recollect, furthermore, that a good horseman always makes a good flier, whereas a good mechanic, or even a good motor-driver, does not necessarily. I would guarantee to make better military aviators out of a bunch of Montana horse-breakers taken haphazard than ever the Aviation Bureau would out of the same number selected from the nicest "pretty Percies" who ever drove a twelve-cylinder buzz-wagon down Fifth Avenue. And I would back the Montana gang to fly better even than the same number of picked drivers of racing automobiles, though probably racing drivers are the next best flying material to horsemen.

Where the horseman has the pull is that he is used to being jolted vertically more than is the motor-driver, and, furthermore, he has "an eye for a country," which the motorist lacks, and this helps him in spotting what is below him, and still more in judging his landings in rough or tricky ground. Also a horseman's hands are much more delicate on the control lever of an aeroplane than are those of the average automobilist. America has practically an unlimited supply of horsemen as fine as any in the world on which to draw for aeroplane pilots, so the States should never lack aviators. Here she may learn a lesson from England, where, despite having a large-horse-riding population, among hunting and racing people, no attempt has been made to draw on it for military aviators, and all sorts of queer people have been made commissioned officers in the hopes that they may turn out to be good fliers.

THE FRENCH SYSTEM.

The French, on the other hand, have not bothered about commissioned aviators, but have taught all sorts of men to fly if they looked like being the right type. As it has turned out, most of the very best French pilots are plain "sapeur-aviateurs," or "caporal-aviateurs," or "sergeant-aviateurs." Some of the best have been promoted to the rank of "adjudant," which corresponds to "sergeant-major" in English-speaking armies.

There are some few commissioned officers in the French Army who are very fine fliers, but most of the commissioned officers in the French Service d'Aviation are "observers"—that is to say, passengers with the N.C.O. pilots, who do the actual observation of things on the ground, for which their military training fits them—or else they are commanding "escadrilles"—or detachments of aeroplanes—so that their work is mostly administrative.

This is the obviously sensible way to build up a large force of aeroplane pilots, for it is absurd to think that there is a really large supply in any country of the class of man who is at the same time socially suitable to become a commissioned officer, who is personally capable of commanding men, and who is possessed of the physical and mental characteristics which make an aviator.

In the States, where—as one is always told on this side of the Atlantic—social distinctions do not count, it ought to be still easier to start all aeroplane pilots in the non-commissioned ranks, and keep them there until such time as they have shown by passing the necessary examinations that their military knowledge, apart from their cleverness as fliers, fits them to hold commissioned rank and to command the men under them—which is precisely where nearly all these "direct-appointment" officers fail so dismally.

All the same, I have horrid suspicions that American social equality, like the Statue of Liberty at the entrance to New York Harbour, is one of the Seven Great Jokes of the World.

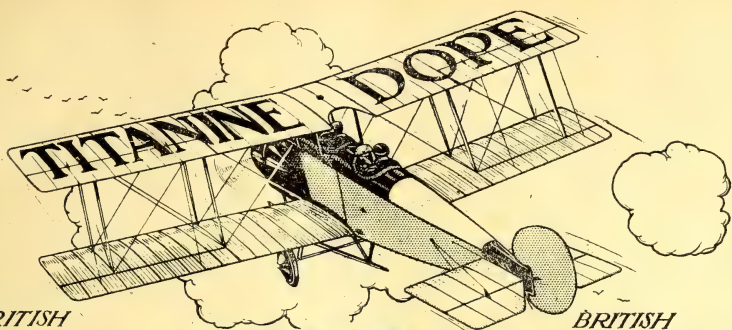
ON AEROPLANE TYPES.

Having made up her mind how to man her Flying Corps, America may consider her aeroplanes. It is going to be many years before it will be possible to standardise military aeroplanes even to the extent that artillery is standardised, and, remember, in field artillery, there are mountain guns, field guns to operate with infantry, horse-guns, or galloping-guns to operate with cavalry, 60-pounders, 4-inch, 6-inch, and 9-inch guns, all used in the field in modern trench warfare, and they talk of 15-inch guns also, besides howitzers from about six-inch up to the German twenty-one-inch. If so many kinds of artillery are needed, how can one attempt to standardise new things like aeroplanes down to two or three types? Yet that is what some of the super-clever civilian advisers of the British Army would like to see—provided that they themselves have the designing of the said types and are paid accordingly.

The French, on the other hand, have always done their best to encourage the production of new types by independent manufacturers. Soon after the beginning of the war the French Army fixed on the four or five machines which had proved most useful, and ordered them to be made in huge quantities, at the same time leaving manufacturers free to produce samples of something better if they could. After some months the French Authorities actually organised a competition open to manufacturers' new types, and very fine results they have got from that competition, though I must not specify what those results are.

The English Authorities, on the other hand, practically put the lid on all private enterprise by sending out orders broadcast for aeroplanes to the plans of the Government's civilian designers and alleged experts. Most of the designs turned out in the past by these people have been failures, and have killed more pilots than the products of any other designers. Tens of thousands of pounds have been wasted in building these machines which were utterly useless for military purposes. The two or three types which have proved fairly successful cost twice as much in time and money to build as they need cost, owing to ignorance of detail, design, and unnecessary complication.

Now that practically every aeroplane factory in England is under Government control, and is only permitted to make what the Government's "experts" approve, all these wonderful Government types are beaten hollow by the new French machines. If given a free hand the British manufacturers can regain the lead they held over the rest of the world a couple of years ago.

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Here, then, is something for America to note. See that Army aeroplanes are strong enough not to break in the air. Inspect rigidly every detail of workmanship as it comes through the shops. This, by the way, is the one matter in which the British Army system excels, and where apparently American manufacturers most need supervision. Military aviators must have machines which are safe to fly, but the strength of an aeroplane should be the strength of a fishing-rod, and not the strength of a lumber-wagon.

It is no use having an aeroplane which cannot possibly break if it is going to be so heavy that it cannot climb out of range of rifle-fire from the ground. German anti-aircraft guns burst their shells up to a height of 19,000 feet, and their shooting is damnably good up to 10,000 feet, so-to-be of any military value an aeroplane must be able to reach 12,000 feet at least, carrying its full military load of petrol, oil, pilot, passenger, and anything it has to carry in the way of machine-guns, and ammunition or bombs, and do it quickly.

THE ENGINE QUESTION.

The military aeroplane must, in particular, have a thoroughly reliable motor. More of the Allies' aviators have been lost in the war through defective motors than from the enemy's fire. Several have been killed through their engines failing when they were just climbing out of small fields, with the result that they have tried to turn back, and have side-slipped with fatal effects. Others have had their engines stop over enemy territory, and have been made prisoners. This has been the case with the British officially designed engines quite as much as with others. The German engines, on the other hand, have proved astonishingly reliable, and, so far as I know, there has never been a case of a German aeroplane being brought down in

the Allies' territory through its engine going on strike.

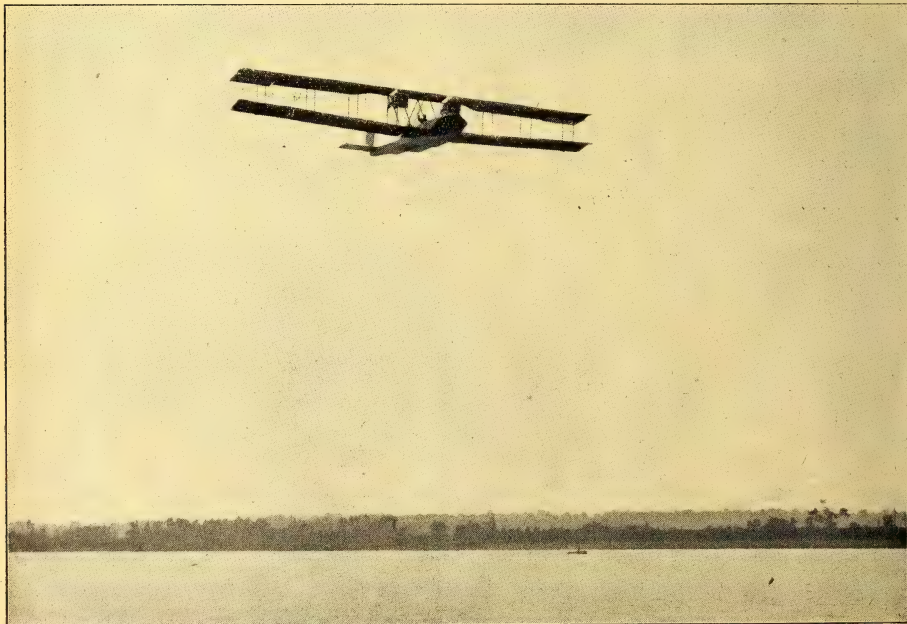
This should be an encouragement to American motor manufacturers to produce reliable motors for aeroplanes. But in designing aero-motors it is well to remember that, unlike an automobile motor, the aeroplane engine is always pulling. Not only has it to draw the aeroplane along, but it has to lift it up, so that it is always running up hill. There is no level ground, and there are no down grades to give it a rest.

It seems pretty evident from war experience that no motor of less than 150-h.p. will be any use in future wars, and even that power will only be used in small fast aeroplanes to carry one or two people, and, perhaps, a light machine-gun. The Germans are using engines of anything between 150-h.p. and 200-h.p. on two-seaters. And there is a tendency all round to build huge machines with three or four engines apiece, each engine giving 200-h.p. Also, it is no use trying to talk business about any engine that weighs more than 5½ lbs. per horse-power, including magneto, radiators, and water. The sooner they can get down to 2 lbs. per horse-power the better.

DIFFERING TYPES FOR DIFFERING JOBS.

Finally, as to types of Military aeroplanes. Fast machines for scouting must carry two people, for an observer's time is taken up with observing, and he cannot spare attention for navigation even if the machine is built to be inherently stable—which is to say, uncapsizable, like a life-boat. Such a machine must do close on 100 miles an hour, and it must carry a couple of machine-guns to defend itself against the little single-seater "bullets" or "tabloids" which do anything up to 120 miles an hour, and carry a machine-gun fired by the pilot himself.

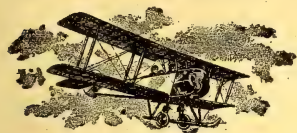
Over and above these there may be bigger and slower



Benoist twin-motor "airboat," of a type to be used for passenger trips between St. Petersburg and Tampa, Florida (United States) this winter. The 200-horse-power craft shown in the photograph carries six persons easily, as it was built to transport 1,150 lbs. useful load. The photograph shows the "airboat" over the Mississippi with four aboard, driven by two 100-h.p. Roberts motors.

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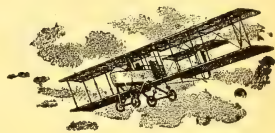
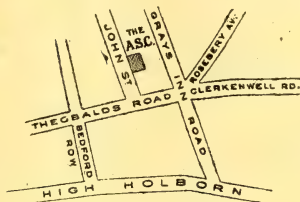
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machines with two or three machine-guns, or even small quick-firers, intended to fight their way over the enemy's lines in spite of the defending "tabloids"—or this type may itself be used to beat off trespassers.

Another type of fighting machine used by the French with great success, and less successfully by the Germans, has two engines, one on each side of the body-work in which the crew sit. And some have a third engine behind the pilot. The Russian Sikorski even runs to two engines on each side of the body, each engine setting in a little body of its own on the wings.

The multiple-engine machines with more than two engines have not done much so far, but they hold out considerable promise for the future, not only as fighting machines, but for passenger-carrying, and it is here that I see commercial opportunities in the future.

AMERICA'S OPPORTUNITY.

America being a new country can go straight from point to point. When, in the Western States anyhow, an American wants to make a road, he goes in a line from place to place, he does not have to follow, round someone else's cabbage-patch, a footpath which originated in the dark ages through some drunken Saxon lumbering through a wood after a stray calf. America can go right ahead on European experience, and build big multiple-engined aeroplanes without troubling about the vested interests of officials in older types, or Government orders that nothing may be built except to official design. America also has the pull in that her big new aeroplane and aero-engine factories are being built up with European money derived from European war orders.

In fact, America can go in such a straight line that she need not bother about roads at all in the wilder

districts. All she needs is a good clear landing ground for aeroplanes every ten or even twenty miles, for choice along the railroad line, and then she can take her mails, and those passengers who want to hustle, by air at anything between 50 and 100 miles an hour.

A HINT TO THE RAILROADS.

If the American railroad bosses are as 'cute as their reputation makes them out to be, they will start in on the aeroplane-mail and passenger proposition themselves, and use the air-lines as feeders for their own companies, just as some English railways actually had the sense to run motor-omnibuses as feeders to their lines. I do not say that an aeroplane trip over the Rockies would be quite the most comfortable method of transit for a millionaire with a weak heart, but anywhere east of the Rockies, and barring a few other really mountainous regions, the business man in a hurry would find the modern aeroplane a real time-saver, and not much more dangerous than some American railroads, if what we hear about them in Europe is half true.

If this is done, it will develop American aviation enormously, and provide the United States Army, whenever it does ultimately come into being, with plenty of sources of supply for war aeroplanes. By the nature of her surface, as well as by her size and importance as a nation, America should become ere long the leader of the world so far as the common use of aeroplanes is concerned. One can almost conjure up visions of the sky at Detroit, Mich., being darkened at dinner-time by the wings of the workers at the Ford Motor and Aeroplane Plant chasing the full dinner-pail by air in machines which will, doubtless, be known as Doves of Peace.—C. G. G.

ALTITUDE AND NERVES.

A recent number of the "Deutsche Medizinische Presse" tells of the prevalence of "flying sickness" in the German flying corps. It is caused mostly by "rapid changes of altitude, whereby the differences in air pressure and temperature make themselves seriously felt, causing headaches, ear-drummings, and difficult breathing. An aviator overcome by such symptoms lands in a state of complete mental and physical collapse. His head is 'splitting' with almost intolerable pains, but relief usually ensues on account of the deep sleep into which the victim automatically falls."

So far the German view of the question, which will doubtless be appreciated by officers of our own Flying Services. It seems possible that continued affection by this form of sickness might produce permanent effect, either analogous to or directly opposite to that of "caisson disease" from which divers suffer. The sufferer from caisson disease becomes "aerated," like soda-water, by the pressure, and the disease ultimately, I believe, ends in a form of paralysis.

When Service flying took place at heights of 3,000 to 4,000 feet there was little to fear from changes of altitude; but now that improvement in anti-aircraft guns and gunnery has made 10,000 feet an ordinary reconnaissance height, and 12,000 to 15,000 a common height in crossing enemy lines, variation in pressure becomes a matter worthy of serious attention by the medical officers pertaining to the Flying Services. Perhaps Service readers of this paper will put this suggestion before the proper authorities.

Frequently one hears of flying officers who have come home for a rest suffering from some intangible disease which for lack of more definite diagnosis is put down as "neurasthenia," and by unsympathetic brother-officers is on occasion described brutally as "cold feet." Personal knowledge of many of these officers would at once

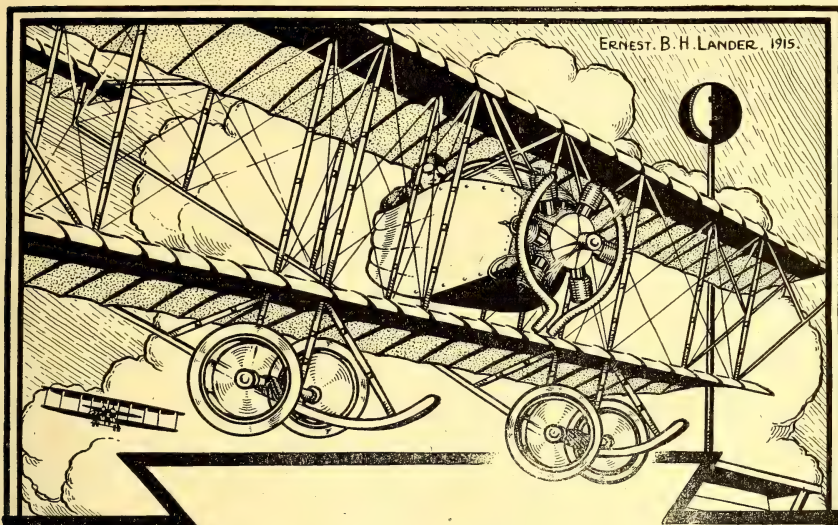
give the lie to any charge of cowardice, and even the strain of continual flying over shell-fire would not account for the peculiar way in which their nerves are affected.

In this connection a very clear distinction must be made between "nerve" and nerves. A man's nerve may be perfectly sound, his courage may be unaffected, he may be as much of a fire-eater as ever, and yet the functioning of his nerves may be affected in such a way as to make him physically incapable of flying safely or usefully, either as a pilot or passenger. Some lack of function in the nerves between eye, brain, and hand, or foot, may cause him to crash every machine he lands, or may spoil his eye for observing or shooting.

These are merely symptoms which are generally summed up by saying that a man is "off his form," but there are the other symptoms of splitting headaches, or pains in the eyes, which pass away after the curious kind of sleep, similar in some cases to a drugged sleep, into which some sufferers fall.

Just how much of the affection of the nerve is caused respectively by pressure variation, by the nerve strain of being constantly over shell-fire, by intense concentration on observation, by sheer hard work, or by common indigestion due to campaign food, is a matter for medical men to decide. The whole subject is well worth careful study by nerve specialists, who will doubtless evolve complicated theories and more or less proper remedies.

One remedy for "caisson disease" is, I am told, to place the patient in an air-lock under high pressure, similar to the pressure he endured when diving, and to let the pressure down very gradually. Reasoning from this analogy, one would suppose that one way of avoiding "flying sickness" is always to descend from great heights very slowly, so as to permit the internal organs to absorb the increased pressure without strain. Caution of this kind might not be popular with hastily inclined



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squadron-commanders. Conversely, of course, pilots ought to climb slowly, though one imagines that, when the choice lay between being "Archied" and getting up to 15,000 as quickly as possible, the average pilot would chance the lower atmospheric pressure in order to avoid the superior pressure of a shell.

It may occur to one that possibly the disease is exactly an inversion of caisson disease, and is caused by exhausting the air from the internal tissues and liquid matter in the body; but this hardly seems likely, because people who live continually at high altitudes feel little or no ill effect, and the disease appears to be caused, not by excess or insufficient pressure, but by sudden differences of pressure. The climb of an aeroplane is hardly so rapid as to cause any ill effect by sudden decrease in pressure. On the other hand, the average pilot comes down as fast as he dare let his machine drop, the speed frequently exceeding 100 miles an hour at an angle of "one in one," so it is possible that the change from the low pressure at 10,000 or 12,000 feet to ground level in a few minutes may produce precisely similar effects to that produced by excessive pressure when diving.

It should be noted that some persons are much more subject to the disease than others, which opens up a further interesting field for study as to the precise mechanical structure of those who are least liable to be affected. In this connection care should be taken to ascertain the precise number of flights above 10,000 feet made in a given period by each subject of investigation, as well as the speed of descent, so as to discover whether speed of descent or a number of trips in quick succession is the principle cause of trouble.—C. G. G.

THE BRITISH WORKMAN.

The following letter deserves publicity:—

Sir,—I note in the current issue of *THE AEROPLANE* you again attack the British workman, and you sound a note of triumph because your opinions have met with no refutation. I may say I have the honour to be one of the many thousands in the aeroplane industry who, as you surmise, read your invaluable journal—one of those who has not yet "ventured to tell you anything you said was untrue." In all candour I look forward to your articles, and, candidly speaking, the pity is a few more thousands have not the advantage of reading them too.

However, I beg to differ in many respects regarding your attitude towards the British workman, after thoroughly perusing, marking, learning, and inwardly digesting your article.

First of all, under the circumstances the British workman has not much time to spare to refute charges brought against him, as no doubt you are aware he works more than a share of overtime. Moreover, as a rule, he has no literary talent and writing is to him a boring subject.

Now I must admit in certain cases the workman is not doing his share; but through no fault of his own. Chiefly it is due to the rules imposed upon him, and the greatest of all is his lack of freedom to go where he pleases. All admit since the commencement of the war the progress and advancement of the aeroplane industry has gone on with leaps and bounds, and in consequence to get the work done workers have been drawn from various trades. However, the class of work is unacceptable to many. For example, I know of a trained engineer with a slight knowledge of theory. This workman for the past eight months has been occupied in drilling holes through spars and attaching clips.

An artist looks with enraptured admiration at his finished model, or goes into ecstasies over a lifelike picture; but can one appreciate the successful attachment of a clip?

Now, to turn to the phrase: "No one on Government work need apply." Is this not an injustice that men who have refrained from entering upon Government

work should have all the best jobs; while often skilled men see no prospects of advancement, as they are tied?

As regards wages and profits it is a mistake to say employers are not making more profits now than in pre-war days. The British workman, with his limited education, cannot lose sight of a rule he was taught at school—"the rule of three" it is termed, I think: If an employer makes £200 profit on one machine, how much profit will he make on 50 machines?

What is more, I know workmen who think their works managers receive commission by sub-contracting, while their own workmen loiter about the shop having made vain endeavours to find a job.

With reference to the bitter comments about deliberate slacking, there are cases, I know; but examples are magnified and exaggerated. Let us not forget there are many, many thousands of workmen, many, many thousands of soldiers—good and bad; but the proportion of bad is small.

It is pleasant to read of employers sitting through the night burning the midnight oil; yet I suppose it is beyond the bounds of possibility for a workman to do likewise. Perhaps investigation of recent inventions may throw light on the matter.

Therefore, in the future, pray do not be too hard on the British workman; for, after all, we all come very near to being under the same class. By some mischance the journalist might possibly have been a workman; while, on the other hand, the workman may have had the luck to have drifted into journalism. [He has been saved that form of hard labour anyhow.—Ed.]

In conclusion I plead forgiveness if I have not stated the case clearly; but I would like to say they are random thoughts—not having the time for careful thinking—of an honest, convinced opinion.

ONE OF THE MANY THOUSAND READERS.

[A very good exposition of the case, and if all men were as this one just man all would be well.—Ed.]

* * *

The following letter is from an intellectual foreigner at present employed on important munition work:—

"Bravo! for your attacks on deliberate limitation of output by some British workmen. We foreigners, left here either because we are unfit for military duty or engaged on munitions work, are watching that nauseating struggle with a comprehensive interest.

"Can I bring a new fat to you? The other day we went to tea with a Belgian lady. Her husband, an Englishman, was present when the following facts were disclosed to us. A young Flemish girl, a friend of theirs, who came over to England at the beginning of the war, is now engaged at the — works, where she was making lately an average of 700 of a certain part per day.

"Her foreman came to her last week, telling her that she should limit her production to 500 a day, or do more if she liked and share the difference with the other girls. The girl refused point-blank, and was very angry at what she considered a deliberate attempt to limit output and rob her of her earnings. She struck work immediately, refusing to do any more until she got an official permission to work as hard as she could, and thereby have the double satisfaction of helping push the accursed Teuton out of her country and to get the just reward of her merits."

[This kind of thing is going on all over the country. The other day a fitter from a motor garage in Coventry, full of enthusiasm, was checked by his foreman in just the same way for finishing certain parts of a B.E. too quickly. This is a cheerful country. The good men volunteer and go to get killed, and the slackers are left to repopulate the country. Under any proper form of government the slackers would be pushed into the fighting line to be killed with the rest.—Ed.]

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From the "London Gazette," Dec. 7th, 1915.

WAR OFFICE, Dec. 7th.

REGULAR FORCES.—N.C.O. to be Sec. Lieut. for service in Field:—

ROYAL SUSSEX.—Cpl. E. P. Roberts, Royal Flying Corps, and seconded for service with Royal Flying Corps. Oct. 23rd.
MEMORANDA.—N.C.O. to be temp. Sec. Lieut.: Lance-Cpl. M. Head, Essex Yeos., and seconded for service with Royal Flying Corps. Nov. 10th.

REGULAR FORCES.—Staff Dep. Asst. Dir. at War Office.—Capt. W. B. Caddell, R.A., from a Staff Capt. vice Maj. A. D. Carden, R.E. Nov. 25th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Adj.—Capt. P. Sidney, Northd. F., and seconded. Nov. 25th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) R. P. J. M'Coey, confirmed in rank.

* * *

From the "London Gazette" Supplement, Dec. 8th, 1915.

WAR OFFICE, Dec. 8th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—Central Flying School: Instructor Capt. (temp. Maj.) L. W. B. Rees, R.A., Sqdn. Commr., Mil. Wing, vice Lieut. (temp. Maj.) G. F. Freyman, D.S.O. Som. L.I. Nov. 28th.
Military Wing: Sqdn. Coms.—Major A. D. Carden, R.E., from a Dep. Asst. Dir. at War Office. Nov. 25th, with seniority from Oct. 30th, 1914. Capt. L. W. B. Rees, R.A., from Flight Com., and to be temp. Maj. whilst so employed. Nov. 28th.

Wing Adj., and to be temp. Capt. whilst so employed: Temp. Sec. Lieut. F. A. Forde, Res. Regt. of Cav., and transf'd. to Gen. List, vice Capt. S. H. Walker, Cheshire. Nov. 22nd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of D. C. MacLachlan as Sec. Lieut. in "Gazette" of April 17th cancelled.

Sec. Lieuts. (on prob.) confirmed in rank: P. R. Burchall, C. G. Hetherington, K. D. G. Collier, J. G. Bulger, G. O. Hayne, W. Boag.

To be Sec. Lieuts. (on prob.): F. H. Soughurst, Oct. 27th. Nov. 8th: W. D. L. Jupp, H. R. Lecomber, G. McKerrrow. Nov. 9th. Nov. 10th: S. Davenport, C. G. Coe, G. Jacques. Nov. 16th. S. Allenby. Nov. 22nd. H. R. Spence. Dec. 1st.

* * *

From the "London Gazette" Supplement, Dec. 8th, 1915.

The Admiralty has received from Vice-Admiral H. King-Hall, Commander-in-Chief, Cape of Good Hope Station, a dispatch from the "Challenger," dated July 15th, dealing with the two attacks on and the final destruction of the German cruiser "Königsberg." Much of the success of the operation is attributed by the Vice-Admiral to the admirable work of the Royal Naval Air Service. The sections relating to aircraft in the dispatch issued on December 8th as a Supplement to the "London Gazette" are given below:—

Sir,—Be pleased to lay before their Lordships the following report of the operations against the "Königsberg" on the 6th and 11th instant:—

In accordance with orders issued by me, the various vessels concerned took up their appointed stations on the 5th July, in readiness for the operations on the following day.

At 4.15 a.m. on the 6th July, H.M.S. "Severn," Captain Eric J. A. Fullerton, R.N., and H.M.S. "Mersey," Commander Robert A. Wilson, weighed and proceeded across the bar into the Kikunja branch of the Rufiji river, which they entered about 5.20 a.m. The "Severn" was anchored head and stern, and fire was opened on the "Königsberg" by 6.30 a.m. The "Mersey" was similarly moored, and opened fire shortly after. Both monitors were fired on with 3-pounders, pom-poms, and machine-guns when entering the river and on their way up, and they replied to the fire.

At 5.25 a.m. an aeroplane, with Flight Commander Harold E. M. Watkins as pilot, and carrying six bombs, left the aerodrome on Mafia Island. The bombs were dropped at the "Königsberg" with the intention of hampering any interference she might attempt with the monitors while they were getting into position.

At 5.40 a.m. another aeroplane, with Flight Commander John T. Cull as pilot, and Flight Sub-Lieutenant Harwood J. Arnold as observer, left the aerodrome for the purpose of spotting for the monitors. . . .

At 5.45 a.m. I transferred my Flag to the "Weymouth," Captain Denis B. Crampton, M.V.O., and at 6.30 a.m. proceeded across the bar. . . .

After anchoring, the "Weymouth" did what was possible to assist the monitors by bombarding at long range a position at Pemba, where a spotting and observation station was supposed to be, and by keeping down the enemy's fire at the aeroplanes. This was done very effectively. . . .

Returning to the operations of the monitors: fire was opened, as before stated, at 6.30 a.m., but as the "Königsberg" was out of sight it was very difficult to obtain satisfactory results, and the difficulties of the observers in the aeroplanes in marking the fall of the shots which fell amongst the trees were very great, and made systematic shooting most difficult. There being only two aeroplanes available, considerable intervals elapsed between the departure of one and the arrival of its relief from the aerodrome 30 miles distant, and this resulted in a loss of shooting efficiency.

At 12.35 one of the aeroplanes broke down, and at 3.50 the second one also. . . .

As it was necessary to make a fresh attack on the "Königsberg" to complete her destruction, further operations were carried out on the 11th July, by which date the aeroplanes were again ready for service, and the monitors had made good certain defects and completed with coal. . . .

The "Severn" was moored in a position 1,000 yards closer to the enemy than on the 6th July, which made her fire much more effective. The observers in the aeroplanes, by their, excellent spotting, soon got the guns on the target, and hit after hit was rapidly signalled. At 12.50 it was reported that the "Königsberg" was on fire. As previously arranged with Captain Fullerton, as soon as they had got the situation well in hand, the monitors moved up the river, and completed the destruction of the "Königsberg" by 2.30 p.m., when I ordered them to withdraw. . . .

I have much pleasure in bringing to the notice of their Lordships the names of the following officers and men:—

Squadron Commander Robert Gordon, in command of the Air Squadron.

Flight Commander John T. Cull.

Flight Lieutenant Vivian G. Blackburn.

Flight Sub-Lieutenant Harwood J. Arnold.

Flight Commander Harold E. M. Watkins.

Assistant Paymaster Harold G. Badger, H.M.S. "Hyacinth." This officer volunteered to observe during the first attack on the "Königsberg," though he had had no previous experience of flying.

Acting-Lieutenant Alan G. Bishop, Royal Marine Light Infantry, of H.M.S. "Hyacinth." This officer volunteered to observe during the second attack on the "Königsberg," though he had had no previous experience of flying.

Air-Mechanic Ebenezer Henry Alexander Boggis, Chatham 14849, who went up on the 25th April with Flight Commander Cull, and photographed the "Königsberg" at a height of 700 ft. They were heavily fired on, and the engine of the machine was badly damaged.

Most serious risks have been run by the officers and men who have flown in this climate, where the effect of the atmosphere and the extreme heat of the sun are quite unknown to those whose flying experience is limited to moderate climates. "Bumps" of 250 feet have been experienced several times, and the temperature varies from extreme cold when flying to a height, to a great heat, with burning, tropical sun when on land. In the operations against the "Königsberg" on the 6th July both personnel and matériel of the Royal Naval Air Service were worked to the extreme limit of endurance. The total distance covered by the two available aeroplanes on that date was no less than 950 miles, and the time in the air, working watch and watch, was 13 hours. . . .

I will sum up by saying that the Flying Officers, one and all, have earned my highest commendations.

Arising out of these operations, the King has been graciously pleased to give orders for the appointment of the following officers to the Distinguished Service Order, in recognition of their services, as mentioned:—

Squadron Commander ROBERT GORDON, R.N.A.S. (Captain, temporary Major, R.M.).

Was in command of the Air Squadron. Was indefatigable in his work, and ran great risks in spotting and communicating.

Flight Commander JOHN TULLOCH CULL, R.N.A.S. (Lieutenant, R.N.).

Flight Sub-Lieut. HARWOOD JAMES ARNOLD, R.N.A.S.

Flight Commander Cull and Flight Sub-Lieutenant Arnold were spotting on the 11th July, under fire, in a biplane, when the enemy's fire damaged it so that it descended in a quarter of an hour from 3,200 to 2,000 feet. During this time no attempt was made to return to headquarters at Mafia, although it was obvious that this could not be done unless a start was made at once. Flight Sub-Lieutenant Arnold continued to send his spotting signals th' whole time, and when a quarter of an hour later the machine was again hit and forced to descend, Flight Commander Cull controlled the machine, and Flight Sub-Lieutenant Arnold

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continued to send spotting corrections to the last, after warning the monitors that they were coming down and would endeavour to land near them. The aeroplane finally came down in the river, turning over and over. Flight Commander Cull was nearly drowned, but was assisted by Flight Sub-Lieutenant Arnold, and both were rescued by a boat from the "Mersey."

The following rating has been awarded the Distinguished Service Medal for his services on the same occasion:—

Royal Naval Air Service—Air Mechanic EBENEZER HENRY ALEXANDER BOGGIS, O.N. 13439.

[It would appear from the above that the original R.N.A.S. contingent had only shore-going machines, which were overworked and gave in. Apparently Major Gordon and Flight Lieut. Vivian Blackburn—both experienced seaplane pilots—arrived between July 6th and July 17th. Both these officers had done distinguished service before going out to East Africa, the former having commanded at Dundee with marked ability and success, and the latter having done good work in the Cuxhaven Raid on Christmas Day of 1914, on which occasion two D.S.Os. were "raffled" among the commissioned officers who took part in the affair.—Ed.]

* * *

From the "London Gazette" Supplement, Dec. 9th, 1915.

WAR OFFICE, Dec. 9th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) Darrell B. James confirmed in rank. To be Sec. Lieuts. (on prob.): C. F. J. North. Nov. 8th. Nov. 15th: E. N. Layton, J. N. D. Heenan.

* * *

From the "London Gazette," Dec. 10th, 1915.

WAR OFFICE, Dec. 10th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Eqmpt. Officers, from Asst. Eqmpt. Officers.—Capt. C. H. Rowe, R. of O. Nov. 11th. Capt. F. L. Scholte, S.R. Nov. 21st. Lieut. (temp. Capt.) Hon. E. A. Stonor, S.R. Nov. 25th.

Balloon Officers.—Sec. Lieut. A. Burbury, Yorks, and seconded. Oct. 1st. Sec. Lieut. E. L. B. Buchanan, R.F.A., S.R. Oct. 21st. Oct. 27th: Lieut. V. A. Beaufort, Devons, and seconded; Temp. Lieut. A. H. Parker, Gen. List; Sec. Lieut. D. B. James, S.R. Temp. Sec. Lieut. W. E. Hicks-Ussher, Suffolk, and transferred to Gen. List Nov. 4th. Capt. R. L. S. Raffles, R. Welsh F., S.R., and seconded. Nov. 5th.

Asst. Eqmpt. Officers.—Sec. Lieut. G. D. Etches, S.R. Oct. 4th. Sec. Lieut. R. P. J. McCoy, S.R. Oct. 14th. Oct. 18th: Sec. Lieut. N. Turner, S.R.; Sec. Lieut. M. Hodge, S.R.; Sec. Lieut. T. G. Clarson, S.R. Oct. 21st: Lieut. G. E. W. Broade, R.E., S.R.; Sec. Lieut. G. G. Lever, R.F., S.R., and seconded. Temp. Lieut. A. R. Earle, Gen. List. Oct. 23rd. Sec. Lieut. F. St. J. F. N. Echlin, R.F., S.R., and seconded. Oct. 27th. Sec. Lieut. E. Bush, S.R. Oct. 31st. Sec. Lieut. S. Ransom, S.R. Nov. 1st. Lieut. S. A. Currin, S.R. Nov. 2nd. Sec. Lieut. F. C. V. Laws, Lincs. Nov. 7th. Temp. Sec. Lieut. G. K. Simpson, R.A., and transf'd to Gen. List. Nov. 8th. Sec. Lieut. W. Boag, S.R. Nov. 16th. Temp. Sec. Lieut. G. H. Padley, Lincs., and transf'd to Gen. List. Nov. 17th. Nov. 21st: Sec. Lieut. J. L. P. Armstrong, A.S.C., T.F.; Temp. Sec. Lieut. M. G. Milsom, R.F., and transf'd to Gen. List; Sec. Lieut. P. R. Burchall, S.R.; Sec. Lieut. C. G. Hetherington, S.R.; Sec. Lieut. K. D. G. Collier, S.R. Sec. Lieut. J. G. Bulger, S.R. Nov. 24th. Temp. Lieut. E. M. Bettington, R.A., and transf'd to Gen. List. Nov. 25th. Appt. of Temp. Sec. Lieut. N. L. Robertson, Gen. List, in "Gazette," Nov. 15th, cancelled.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) T. Guy Clarson, confirmed in rank. To be Sec. Lieuts. (on prob.): E. W. Havers. Oct. 19th. Nov. 15th: C. Hirtzel, R. K. C. Maguire.

* * *

From the "London Gazette" Supplement, Dec. 11th, 1915.

WAR OFFICE, Dec. 11th.

REGULAR FORCES.—MEMORANDA.—To be temp. Sec. Lieut.: Sgt. W. Waits, Royal Flying Corps. Nov. 13th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Com.—Capt. R. E. Orton, E. Lancs., from flying officer. Dec. 1st.

Flying Officers.—Temp. Capt. R. Burdon, Durham L.I., and transf'd to Gen. List. Nov. 19th. Nov. 23rd: Temp. Sec. Lieut. G. B. Hodgson, R.A., and transf'd to Gen. List; Temp. Sec. Lieut. H. C. Smith, Manch., and transf'd to Gen. List; Lieut. R. E. Cuff, Loyal N. Lancs., S.R., and seconded. Nov. 25th:

Temp. Lieut. G. W. T. Garrod, R. Warwick; Sec. Lieut. R. L. H. Laye, Gordon H., and seconded; Temp. Sec. Lieut. D. G. Liddle, E. Kent, and transf'd to Gen. List; Temp. Sec. Lieut. W. J. Y. Guilfoyle, R.A., and transf'd to Gen. List; Temp. Sec. Lieut. E. J. Tyson, Gen. List. Nov. 27th: Sec. Lieut. F. G. Hogarth, S.R.; Sec. Lieut. G. G. Samuel, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Lieuts. to be Capt.: Hon. M. Baring. Oct. 25th. A. G. Clark. Nov. 23rd. (Temp. Capt.) Hon. E. A. Stonor. Nov. 25th.

Sec. Lieuts. (on prob.) confirmed in rank: F. G. Hogarth, G. G. Samuel.

A. T. Harris to be Sec. Lieut. (on prob.) Nov. 6th.

* * *

From the "London Gazette" Supplement, Dec. 13th, 1915.

WAR OFFICE, Dec. 13th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—Oct. 21st. Lieut. A. G. R. Garrod, Leics., S.R., and seconded; Temp. Capt. E. C. Perrin, Cheshire, T.F. Nov. 11th: Lieut. C. G. Burge, York and Lancs.; Temp. Sec. Lieut. W. H. Hargreaves, Middx., and transf'd to Gen. List; Temp. Sec. Lieut. J. McArthur, B. Berks, and transf'd to Gen. List. Nov. 22nd: Sec. Lieut. A. W. Davies, R.A., and seconded; Lieut. H. B. Davey, N. Staffs., T.F.; Temp. Sec. Lieut. B. C. Rice, Gen. List; Temp. Sec. Lieut. R. Chadwick, Gen. List; Lieut. H. Clements-Fleming, 17th Lars., and seconded; Temp. Sec. Lieut. C. T. Cleaver, Gen. List; Temp. Sec. Lieut. C. F. Portal, Motor Cycl. Sec., R.E., S.R.; Lieut. C. G. Beaton, Middx., S.R., and seconded; Temp. Lieut. G. S. Inglis, Conn. Rang., and transf'd to Gen. List; Sec. Lieut. T. Henderson, Som. Yeel. Engrs., R.E., T.F.; Sec. Lieut. R. Corbett, W. Som. Yeo.; Temp. Sec. Lieut. A. M. Vaucour, R.A., and transf'd to Gen. List; Temp. Sec. Lieut. R. A. Wills, Gen. List; Sec. Lieut. K. E. Lloyd, R. Welsh F., and seconded; Temp. Sec. Lieut. H. C. Evans, Gen. List; Temp. Sec. Lieut. H. E. Fletcher, Gen. List; Sec. Lieut. J. E. Catherall, R. Warwick, and seconded; Sec. Lieut. F. R. Hardie, 3rd Hrs., and seconded; Sec. Lieut. L. A. K. Butt, S. Staffs., and seconded; Sec. Lieut. P. Anderson, A. and S.H., and seconded; Temp. Lieut. M. Jacks, London, T.F.; Sec. Lieut. R. Whitaker, Rifle Brig., and seconded; Temp. Sec. Lieut. T. McK. Hughes, K.R.C., Lieut. L. W. W. Lees, Antrim R.G.A., S.R., and seconded; Lieut. J. S. B. MacPherson, Can. Art.; Temp. Sec. Lieut. K. A. Creery, Gen. List; Temp. Lieut. J. C. Russell, R.E.; Temp. Sec. Lieut. G. W. M. Green, Army Cycl. C.; Temp. Lieut. C. Porri, Lincs., and transf'd to Gen. List; Lieut. H. French, W. Yorks, S.R., and seconded; Temp. Sec. Lieut. H. J. Payn, Motor Cycl. Sec., R.E., S.R.; Lieut. M. W. Thomas, R.A., and seconded; Capt. A. V. Holt, Royal H., and seconded; Lieut. A. McR. Moffat, A. and S.H., T.F.; Temp. Lieut. O. I. Preston, Notts and Derbys, T.F.; Lieut. C. C. Haynes, Devons, and seconded; Temp. Sec. Lieut. S. T. Welch, Gen. List; Temp. Sec. Lieut. G. A. F. Layton, Gen. List; Sec. Lieut. A. D. Bell-Ing, Gordon H., S.R., and seconded; Lieut. J. H. C. Minchin, Scot. R., and seconded; Sec. Lieut. A. H. Botrell, R. Warwick, and seconded; Temp. Sec. Lieut. K. F. Balmair, R. Scots, and transf'd to Gen. List; Temp. Sec. Lieut. C. A. Russell, E. Kent, and transf'd to Gen. List; Temp. Sec. Lieut. T. K. G. Ridley, Yorks, and transf'd to Gen. List; Temp. Sec. Lieut. A. L. Findlay, Seaford H., and transf'd to Gen. List; Temp. Sec. Lieut. A. Murray, Gordon H., and transf'd to Gen. List; Temp. Sec. Lieut. A. J. Insall, Gen. List; Temp. Sec. Lieut. L. C. Drenon, Norfolk, and transf'd to Gen. List.

MEMORANDA.—Cpl. R. Chadwick, R.E., to be temp. Sec. Lieut. for duty with Royal Flying Corps. August 17th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on prob.): G. C. Mills. Nov. 5th. R. T. Lattey. Dec. 3rd. S. Turner. Dec. 6th.

NAVAL.

The following appointments were notified at the Admiralty on Dec. 7th:—

ROYAL NAVAL AIR SERVICE.—Messrs. G. D'Arcy Meynell and V. Greenwood entered as temp. Lieuts, R.N.V.R., with seniority December 6th.

Mr. B. C. Morley, entered as temp. Sec. Lieut. R.N.V.R. with seniority December 6th.

Mr. A. J. H. MacColl entered as prob. Flight Sub-Lieut., for temp. service, with seniority October 17th.

* * *

The following appointments were notified at the Admiralty on December 8th:—

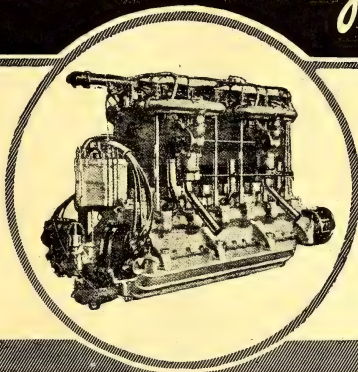
ROYAL NAVAL AIR SERVICE.—Messrs. O. S. Stiles and H. W. Wright granted temp. commissions as Sub-Lieut., R.N.V.R., and appointed to the "President," additional, with seniority December 6th and Dec. 7th respectively.

The undermentioned have been entered as prob. Flight Sub-Lieuts. for temp. service and appointed to the "President," addi-

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tional, all to date December 7th: T. R. Holden, T. H. Newton, and N. R. Cook.

* * *

The following appointments were notified at the Admiralty on December 9th:—

ROYAL NAVAL AIR SERVICE.—Lieut. (19th Canadian Infantry Batt.) J. A. Ramsay entered as Prob. Flight Sub-Lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date December 8th:—

Prob. Flight Sub-Lieuts. V. E. Sieveling and C. Day granted temp. commissions as Sub-Lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date December 8th.

* * *

The following appointments were notified at the Admiralty on December 13th:—

ROYAL NAVAL AIR SERVICE.—Flight Com. E. R. C. Nanson, to the "President," for special service, to date December 10th.

Mr. W. E. McConnell entered as prob. Flight Sub-Lieut. for temp. service, with seniority December 10th, and appointed to the "President," additional, for R.N.A.S.

The following prob. Flight Sub-Lieuts. (temp.) confirmed in rank, with original seniority, and reappointed to the "President," additional, for R.N.A.S., to date as stated: H. E. Crawford, M. J. M. Bryan, H. V. Worrall, N. C. Blanch, B. R. Lee, E. Potter, G. K. Williams, and G. R. S. Fleming, Nov. 26th; F. E. P. Barrington, H. V. Reid, I. N. C. Clarke, H. L. Francis, F. D. H. Bremner, J. H. D. M. Campbell, R. R. Soar, R. J. O. Compston, S. A. Black, J. Robinson, D. Whittier, A. B. Shearer, and C. J. Moir, Nov. 23rd; J. E. Minifie, Nov. 24th; E. L. Pralle, Nov. 27th; S. M. Kinkadee, J. S. Bolas, and K. V. Hooper, Dec. 1st; and L. E. Smith, Nov. 25th.

* * *

The following communication has been issued by the Press Bureau on December 9th:—

"Berlin, December 1st (Wolff).—In his report of November 29th Sir John French states that a German submarine was destroyed by an English aviator near Middelkerke. Wolff's Bureau hears from an authoritative source, however, that this report is totally untrue. ("De Telegraaf," December 1st.)

"Wolff's Bureau says: 'In spite of yesterday's *démenti*, Reuter's Agency repeats, upon detailed official information received, particulars of the air fight in which a British aeroplane broke the back of a German submarine with a bomb. On application to the proper authority Wolff's Agency is informed that, if Reuter is correct, the sinking of a submarine must be that of a British or French submarine by a British aeroplane, as there can be no question of a German submarine being involved.' ("Der Tag," December 3rd.)

"With reference to the above German statements, one of which appeared in 'De Telegraaf' of December 1st, and the other in 'Der Tag' of December 3rd, it should be noticed that the denials are not official, but are so worded as to give readers the impression that they have read an official denial of the destruction of the German submarine off the Belgian coast. That, however, is not the case, and no authority for the denial is specified."

* * *

The Secretary of the Admiralty announced the following casualties on December 12th:—

MISSING.

Under date December 10th:—
Flight-Comm. Charles E. Robinson, R.N. (Captain R.M.L.I.).

SERIOUSLY INJURED.

Under date December 11th:—
Flight Sub-Lieut. George G. A. Armitage, R.N.

SLIGHTLY INJURED.

Under date December 11th:—
Flight Sub-Lieut. Stanley Kembell, R.N.

* * *

The Secretary of the Admiralty announced the following casualty on December 13th:—

DIED OF INJURIES.

(Under date December 12th.)

Proby. Flight Sub-Lieut. George G. A. Armitage, R.N.

An inquest was held on December 13th on Sub-Lieut. George Armitage, aged 22, R.N.A.S., a son of the clerk to the Newnham (Gloucester) Guardians.

Flight-Commander Busted, R.N., said that Sub-Lieut. Armitage was a passenger in a biplane which went up at the Hendon Aerodrome on Saturday. The machine was upset by a gust of wind and nose-dived to the ground.

It burst into flames, due to the bursting of the petrol-tank. He attributed the accident to the biplane being at an insufficient height to recover when it upset.

Medical evidence showed that death was due to concussion and shock, following injuries to the head and burns on both legs, and the jury returned a verdict of "Death from misadventure."

[One may perhaps add that young officers flying B.E.2.c's should exercise the greatest care in turning when climbing, as this type is peculiarly liable to get into an uncontrollable spin and dive if stalled, either by the pilot or by a gust, when turning. Once the dive starts, the inherent stability of the machine makes it far more difficult to bring under control again than if it were an ordinary unstable machine. Many pilots think the machine must be safe because it is labelled "stable," but for an ordinarily skilful pilot it is actually less safe than an unstable but easily controlled machine. It is reported that after the machine had been burning for some time two bombs exploded. It seems worth while to inquire why a machine which was being used for practice work was carrying bombs.—Ed.]

MILITARY.

The following passage in the telegraphic dispatch from General Headquarters in France, dated December 9th, 1915, 7.25 p.m., refers to aircraft:—

(1) Bad weather has limited activity in the air, but, in spite of very adverse conditions, our aviators have been able to do useful work. Two machines which went on reconnaissance on the 5th have not returned.

* * *

The following passage in the dispatch from G.H.Q., which appeared on December 13th, refers to aircraft:—

On the 8th sixteen of our aeroplanes bombed a Store Depot at Miraumont and an aerodrome at Hervilly. This attack was carried out in a high westerly wind, which made flying difficult. All machines returned safely, and considerable damage is believed to have been done to both objectives.

The weather since my last communiqué has been very stormy and wet.

* * *

The following casualties in the Expeditionary Force were reported on December 7th under date December 2nd:—

MISSING.

Lieut. D. W. Grinnell-Milne, Royal Fusiliers, att'd. Royal Flying Corps.

Lieut. C. C. Strong, 13th London (T.F.) (Princess Louise's Kensington), att'd. Royal Flying Corps.

[According to the German communiqué of December 2nd these officers were taken prisoners.—Ed.]

Previously officially reported Missing, now unofficially reported Killed.

Sec. Lieut. B. G. James, R.F.A., att'd. Royal Flying Corps.

Sec. Lieut. James was gazetted to the 2nd Gloucestershire Battery (Territorial), 1st South Midland Brigade, in August, 1914.

* * *

The following casualty in the Expeditionary Force was reported on December 8th, under date December 3rd:—

WOUNDED.

Lieut. G. L. P. Henderson, Royal Flying Corps.

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AND

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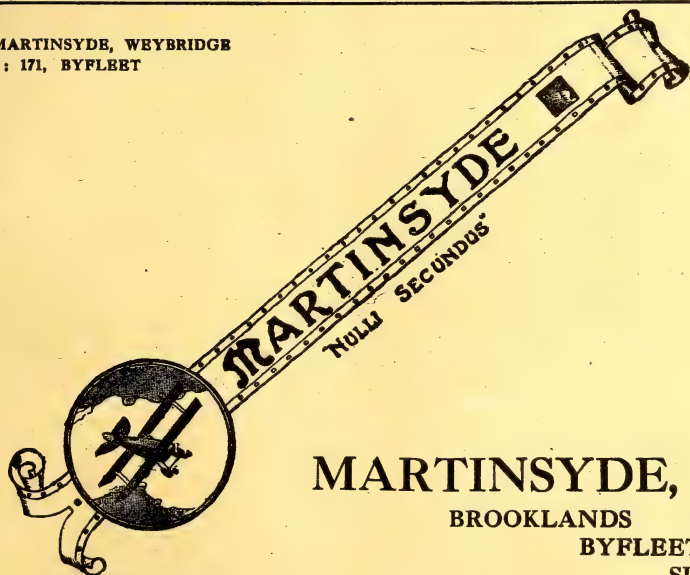
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The following casualties in the Expeditionary Force were reported on December 13th from General Headquarters under date December 6th:—

MISSING.

Sec. Lieut. A. R. Howe Browne, Royal Flying Corps.
Lieut. G. A. Porter, R.F.A. and Royal Flying Corps.

The following also appeared in the Casualty List on December 13th:—

Previously reported Missing, now reported Prisoner of War.

Lieut. A. C. Collier, King's Own (Royal Lancaster), attd. Royal Flying Corps.

PERSIAN GULF.

Officially reported Prisoners of War.

Fulton, Sec. Lieut. E. J., 1st Lancers, attd. R.F.C.

Reilly, Mjr. H. L., 82nd Punjabis, attd. R.F.C.

Yeats-Brown, Capt. F. C. C., 17th Cavalry, attd. R.F.C.

* * *

It is reported that Lieut. Croft, 8th Somerset Light Infantry, was killed at Birmingham on the morning of December 8th. He was out practising with Lieut. McDonald as pilot when something went wrong with the engine, and the machine came down. Lieut. Croft was killed on the spot, but Lieut. McDonald was somewhat seriously injured.

The inquest on Mr. Croft, who was 24 years of age, was held at Curdworth, near Birmingham, on December 11th. The Rev. O. T. B. Croft, Rector of South Cadbury, Somerset, identified the body as that of his son.

Major Rodwell, Royal Flying Corps, put in a statement by Lieut. McDonald, the pilot, who was suffering from severe injuries.

Lieut. McDonald said he asked Lieut. Croft if he would go up with him as a passenger. He noticed that the engine was missing fire when he was at a height of 1,500 ft., and decided to land. He turned off the petrol but did not switch off the electric ignition. The machine did not answer the control, and though he did all he could to get the machine into normal position, it crashed

to the earth. Major Rodwell said it was one of those cases of bad luck which happened in flying. He did not think the machine got into an air pocket. He was not a believer in air pockets.

The jury returned a verdict of accidental death.

[Without knowledge of the precise type of machine on which the accident occurred one cannot give even a guess at the prime cause, but short of breakage of a control the only other cause of loss of control seems to be an uncontrollable spin, due either to defective aerodynamic design, or to a mistake on the part of the pilot. Air-pockets, as such, do not exist, and the downward currents commonly called pockets are never of such extent or velocity as to influence the control of a machine for more than a few feet at a time, except in tropical climates or in hurricanes.—Ed.]

* * *

The "Court Circular" issued from Buckingham Palace on Thursday, December 9th, says that the following officer had the honour of being received by the King, when his Majesty invested him with the Insignia of Companion of the Order into which he has been admitted:—

THE DISTINGUISHED SERVICE ORDER.

Captain G. A. K. Lawrence, Royal Flying Corps.

MILITARY CROSS.

Captain C. E. C. Rabagliati, Royal Flying Corps; Captain E. W. Wilson, Royal Flying Corps; Captain R. M. Vaughan, Royal Flying Corps; Captain L. A. Strange, Royal Flying Corps; and Lieut. C. E. H. James, Royal Flying Corps had the honour of being received by his Majesty, when the King decorated them with the Military Cross.

* * *

The Under-Secretary for War made the important announcement in the House of Commons on December 13th that the defence of London against air raids is being transferred from the Admiralty to the War Office, with the result that Sir Percy Scott will cease to be in charge.

One naturally regrets the possibility that in losing Sir



Preparing a camp road for R.N.A.S. cars in Egypt.

Percy Scott valuable ideas may have been lost, but perhaps, after all, the job is one for soldiers. Anyhow, as this paper pointed out some time ago, military gunners are likely to do better shooting than sailors, under the circumstances.

* * *

The Press Bureau issued on December 12th a report by Messrs. Jackson and Russell, of the American Embassy at Berlin, on the British prisoners of war camp at Blankenburg on November 25th. They report that the atmosphere of the camp is excellent, and that the officers detained there had no complaint to make except the scantiness of space for exercise. In addition to Colonel Gordon, there are now twelve British officers at the camp. Since the last visit in June four officers have arrived there, among them being Captain Robin Grey, R.F.C.

* * *

The following appeared in the Births Column on December 13th :—

BRABAZON.—On December 9th, at Albert-gate-mansions, 219, Knightsbridge, the wife of Major the Hon. Claud Brabazon, a daughter.

* * *

The "Morning Post" publishes the following letter said to be from "Flight Sub-Lieut. Slade, R.N.A.S.," who was captured recently by the Germans, to the Rev. George Greer, rector of Portaferry, County Down. He says :—

"The German officer's first shot, unluckily for us, hit our petrol tank, and flames burst out behind. Darley, the pilot, shoved her nose down, and the German aviator followed us down, keeping behind and pouring lead into us the whole time. Fortunately, the tank did not explode—I cannot understand why—but went out. Darley had one bullet through his arm, one took the tip of his finger off, another smashed his thumb to smithereens. I amputated it with my penknife. I was untouched except

my clothing. I could not set our machine on fire, as all the petrol had come out, and my efforts on the wing only ended in the waste of a box of matches. Darley did a stunt landing with only his left hand—extraordinarily plucky, I call it—and saved my life."

[There seems to be some sort of mix-up here, for on December 2nd Capt. C. C. Darley, R.F.A. and R.F.C., was reported wounded and a prisoner, and on the same date Sec. Lieut. R. J. Slade, Army Cyclist Corps, att'd. R.F.C., was also reported a prisoner of war. In the same list Sec. Lieut. Medlicott, R.F.C., and Lieut. D. Leeson, of the Canadian Contingent, were reported prisoners of war, so presumably the two latter were in one machine which "failed to return," and Capt. Darley and Mr. Slade were in the other. It appears, therefore, that the Reverend Mr. Greer is inaccurate as to the rank and Service of his young friend, whose letter should not, in any event, have been communicated to the press.—Ed.]

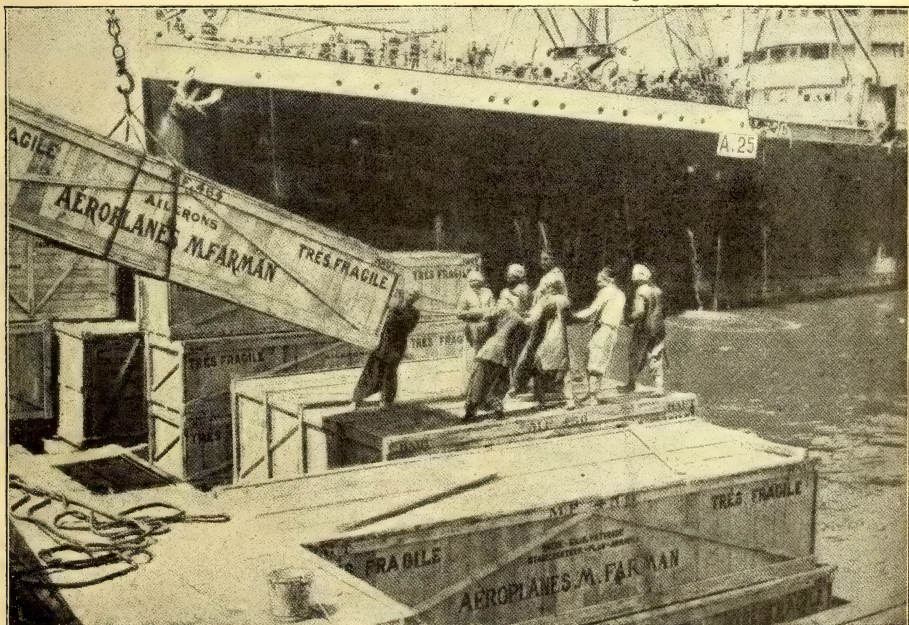
* * *

In another letter, to his father, which was published in the "News of the World," Mr. Slade said :—"Lieut. Immelmann, of the German F.C., came up behind us and opened fire with his machine-gun. . . . (The matter here is as in the letter quoted above.) . . . I explained (as you will see from German wireless) that we were on a French machine, and if we had been on a British the armour-plating would have saved us.

"Lieut. Immelmann descended too. He is a gentleman, and if we ever capture him I hope he will be treated the same. . . . Darley is in hospital and keeping up his spirits despite his wounds. I'd willingly go through it all again with him."

* * *

Apropos the recent storms a daily paper says :—"Captain Abercromby, of the Royal Flying Corps, on his way



Landing Aeroplanes "Somewhere in the Mediterranean." The fact that this picture, taken obviously on a wharf under Government control, reached this country from Germany via a neutral country, is not without interest, as showing how complete are the enemy's sources of information.

to Scotland, was caught in the heavy snowstorm in the Peak district of Derbyshire and forced to come down."

* * *

An N.C.O. of an infantry regiment tells an extraordinary story of an incident which occurred recently at a village not far from Armentières. A German aeroplane was flying in the vicinity of the village when a stray machine-gun bullet severed the petrol pipe to the carburettor and stopped the motor. The pilot glided down into the wide main street of the village, and as there were very few people about the crew calmly got out and coolly set to work to repair the breakage. Apparently it was no one's job to investigate the bona-fides of the aeroplane, so they were left absolutely unmolested. The pilot got the engine started up once more, and just as he was in the act of getting off a British officer happened to stroll by within sight of the machine and recognised it as a Bosche-plane.

He immediately rounded up sundry soldiers who were billeted in the village, but, as was to be expected, their fire was ineffectual. However, before the German machine had got very far a British scout descried it from afar and quickly overhauled it. The first few shots killed both the pilot and his passenger, and the machine came down to the ground in a heap.

The sporting effort so calmly made to escape from enemy territory makes one wish that the German aviators had escaped at least with their lives, though not with their liberty.

FRANCE.

The communiqué of December 8th says:—

In Champagne, in view of the activity of the enemy's artillery, ours entered into action with great violence. Observations made from our aircraft enabled us to ascertain the efficacy of our fire.

This morning one of our aviators, pursuing a fast German machine at an altitude of 3,000 metres, succeeded in getting within 20 metres of the latter, and attacked it with his quick-firing gun. The enemy aeroplane immediately caught fire and blew up. Both its occupants fell within our lines near Tilloloy.

* * *

The communiqué of December 12th says:—

This morning a British cargo boat having run ashore near the Belgian coast, three German seaplanes endeavoured to sink her by dropping bombs. Several Allied aircraft, including one of ours, attacked them, and put them to flight, while some French torpedo boats from Dunkirk refloated the vessel under the fire of a German battery.

* * *

It was reported from Zurich on December 7th that a great increase in aerial activity on the part of German aviators is noticeable in Alsace. They have been reconnoitring the French positions on that front, and it would appear as if Germany contemplated an important offensive there.

* * *

It is reported that a manager, a foreman, and sundry workmen employed in one of the big French aircraft factories have been convicted of using in finished machines parts which had been condemned by inspectors, the parts being passed through the ultimate stages by means of a false stamp. It is possible that some of the fatal accidents which have occurred on the particular type of machine made at these works may be due to this particularly villainous fraud.

There are, of course, black sheep in every flock, and it is hoped that in this case the criminals have been properly dealt with. Shooting, as a matter of fact, is rather too good for them.

* * *

All concerned with aviation will learn with great regret of the death of Lieut. Gaston Caudron, who, with his

brother, René Caudron, was the inventor of the famous biplane bearing his name.

The accident occurred while a new machine, tried the day before in worse weather conditions, was being tested. After about twelve minutes' flight the machine turned over, and M. Caudron and his two companions were thrown out about fifty yards from the machine and killed instantly.

Gaston Caudron had recently been made a Chevalier of the Legion of Honour for his services in producing one of the most serviceable aeroplanes used by the Allies, and for the same reason had been promoted from "Sapeur-aviateur" to Lieutenant without having flown on active service.

Gaston Caudron was a farmer at Le Crottoy, near the mouth of the Somme, and his brother René was a merchant in the town. Gaston was first smitten with the craze for aviation and built experimental machines, his brother merely assisting. They met with considerable success, but neither was a rich man, so they had to work in a small way. Finally the time came when Gaston had spent all his savings, so René bravely put in every penny he could raise of his own and his relations', and after a hard struggle the French Government was forced to recognise the high value of the Caudron as a school machine and for cross-country work.

Only shortly before the war the French Army began ordering Caudrons largely. In the early days of the war the Caudron escadrilles did splendid work, especially with the artillery, and after some months even the English saw that the machine was all its makers claimed for it. Then the double-engined Caudron came and met with immediate success. The brothers had proved that their early work was of value to France—and to the other Allies—and all seemed to point to further successes. In the promise of a brilliant future Gaston has died. His death is more than a loss to France: it is a loss to the cause of the Allies and to the whole future of aviation. To his brother René one offers the sincere sympathy of all concerned with British aviation, and one hopes that he may continue with success the work which he and Gaston began so bravely and have carried through with so much determination.—C. G. G.

GERMANY.

The communiqué of December 9th says:—

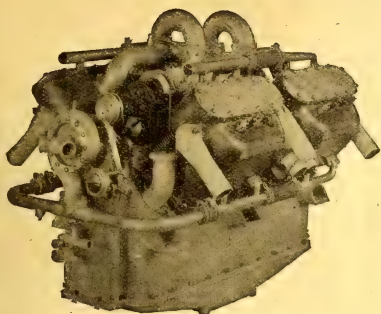
South of Bapaume we forced a French aeroplane to land and captured the occupants.

* * *

References to officers of the Flying Services occur in a report by Mr. J. Jackson, of the American Embassy at Berlin, on visits paid by him last month to prisoners of war in camps at Munich and Ingolstadt, which was issued on December 7th by the Press Bureau. No complaints of importance are recorded by Mr. Jackson.

At Ingolstadt the officer prisoners are housed in the forts, while the men are accommodated in a camp. In Fort 8, Squadron-Commander Edward Briggs, Royal Naval Air Service, is the only British officer, but he stated expressly that he wished to remain where he was. There has been some misunderstanding about Commander Briggs's military rank, and as yet he has received only the allowance paid to a subaltern. The matter is being cleared up, however, and Mr. Jackson was told that he would probably soon receive the full amount to which his rank entitles him, including back pay.

In Fort 9 there were three British officers: Lieut. Allsopp, London Scottish, Lieut. Scholfield, R.F.C., and Capt. Wilson, Scottish Rifles, attached R.F.C., the last two having been brought to Ingolstadt in September. These officers had no complaint to make except with regard to the ventilation of their room, which they share with French and Russian officers. There had recently been a change in the commandant of this fort, and general conditions are improving under his administration.



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In Fort 10 Lieut. W. M. Crabbie, 1st Lowland Brigade, R.F.A., attached R.F.C., was the only British officer. He had been captured in July, and after treatment for his wounds in a hospital in Cologne (where, he said, the treatment was good) had been brought to Ingolstadt on September 12th. He had no complaints to make, but would prefer to be interned in a place where there are other British officers.

[It may be news to some people that officers who are prisoners of war receive pay from their captors according to their rank, and that in this respect Germany acts strictly in accord with the rules of civilised warfare.—Ed.]

RUSSIA.

The communiqué of December 8th says:—

One of our heavy batteries forced a German airship to land in the region of Metzendorf, north of Baldon. We bombarded the spot where the airship had descended, and a loud explosion was heard, probably caused by the destruction by our fire of the airship or some other receptacle containing gas.

* * *

The communiqué of December 9th says:—

A large German aeroplane has been obliged to come down within the Russian lines, in the district of Dvinsk, owing to motor defect. The aviators, of whom one was a colonel, attempted to resist, but were obliged to surrender. At the moment of capture, the colonel attempted to swallow a paper, but failed to do so.

[It must have been a dispatch from the Petrograd correspondent of a London paper.—Ed.]

* * *

The communiqué of December 10th says:—

On the Western front there have been no changes. Near Khumskest-Kremenetz an Austrian aeroplane fell in our lines.

ITALY.

The communiqué of December 10th says:—

An enemy aeroplane dropped some bombs in the Dogna valley, but did no damage.

* * *

Since my last notes appeared in these columns further news of the big Caproni is to hand from several sources. A raid was safely carried out by one of them somewhere near Trieste on November 25th, according to an enemy newspaper. (Probably the machine of unusual size mentioned by your Danish correspondent was a Caproni.)

* * *

I learn, too, repeatedly and in many forms, of the rumoured withdrawal of those French pilots whose services were put at Italy's disposition very early in her war. It is queer, too, that in the enemy reports to this effect the withdrawal is not attributed to the prowess of their own flying arm.

* * *

Judging purely by the honours and promotion gained by them, her dirigible crews have been of use to Italy's armies. Nor have the gas-bag men.—I should say the military balloonists—been wanting in valour, or the small silver medals awarded it when detected.

* * *

One regrets to read of squabbles just now. It seems, however, that the higher he flies the more dirt is thrown after him when the flying-man is a great poet. Like shrapnel and other noxious things, the mud may do more harm on its earthward return.

Talking of the earth's surface, the following . . . does so naturally:—

Smart One: "Yes, this trench warfare reminds one of orange-skin."

The Other: "!!! ? ? ? etc., etc."

Smart One: "Sort of 'I throw you down to-day, you throw me down to-morrow.'"

TURKEY.

The communiqué of December 8th says:—

On December 5th. . . Our columns, which separately

advanced east of Kut-el-Amara, directed their fire against three transport vessels and two monitors. One monitor was set on fire, and two vessels were captured, besides two more freight vessels. One of the latter carried two aeroplanes and much aerial material. Altogether six aeroplanes have been captured on this front. [Altogether the Flying Corps in Mesopotamia have had a very bad time. Two officers (Lts. Burn and Merz) were killed by Arabs and four (Maj. Reilly, Capt. White and Treloar, and Lt. Fulton) have been taken prisoners. The prisoners' four machines and the two mentioned above probably account for the six claimed. Apparently Capt. Petre is about the only one left of the original Australian contingent.—Ed.]

* * *

The communiqué of December 10th says:—

On the Irak front the enemy's resistance is sensibly decreasing. Our troops have sanguarinarily repulsed all English sorties. The aeroplanes we captured have been repaired, and are now being used against the enemy.

On the Dardanelles front. . . On December 8th, near Akbach, we brought down an English aeroplane. The aeroplane and the aviators were completely burnt.

[No casualty to any R.N.A.S. aviators appears as on December 8th, but, possibly, this may refer to Capt. Robinson, R.M.L.I., reported missing December 10th. He may have had a military observer with him.—Ed.]

DENMARK.

It was reported from Copenhagen on December 6th that the aluminium framework, which was all that was left of Z 18, has been melted down and sent from Tondern to Friedrichshafen. Another Zeppelin, of a smaller and older type, has taken its place, assisted by several seaplanes, of which one was reported to be missing since November 30th, after a trip along the islands of Manøe and Fanøe.

Z 18 is described as the largest and costliest airship of the German fleet. People on the West Coast who saw the ship on her first and last trip on November 15th say that she differed considerably from the usual type, being round at both ends instead of pointed, and the envelope being of bigger diameter. The gondolas were built flush with the envelope.

Z 18 made only a single trip over the island of Sylt, and on the morning of November 18th it was blown up and totally destroyed while soldiers were pumping gas into her in a shed at Tondern, Schleswig-Holstein.

SWITZERLAND.

It was reported from Berne on December 8th that a few days before a German aviator flew over Swiss territory near Basle. The German Minister at Berne immediately waited on the Swiss Government, to whom he apologised, promising that such incidents should not recur. Since then another German has twice flown over Swiss territory near La Chaux de Fonds, where already a German aviator dropped bombs. It is believed that these flights are not mere accidents. German apologies are cheap, and Germany will apologise to-day and do precisely the same thing to-morrow if it suits her. There is a great contrast between the hubbub made by the German-Swiss Press on the occasion of the Friedrichshafen raid by Allied aviators and the obscure manner in which the last visits of German aviators have been reported.

[The Germans, being an intensely practical people, fully recognise the simplicity of apologising after having done what one wanted to do.—Ed.]

CEYLON.

It is reported that the donors of the Ceylon Overseas aeroplane have asked that its name be the "Paddy Bird." Nevertheless, the machine was not built in the Emerald Isle.



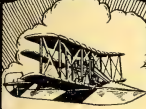
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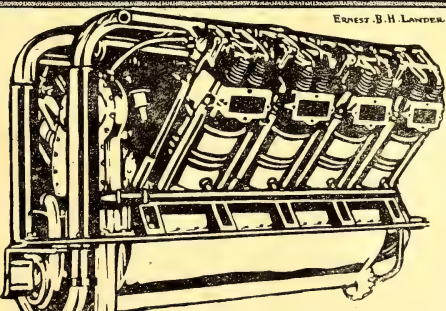


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U. S. A.

At the request of Major-General John F. O'Ryan, the head of the National Guard of New York, the Aero Club of America has appointed a special committee to co-operate in organising an aviation section of the National Guard. This committee is composed of Messrs. Alan R. Hawley, president of the Club, W. Redmond Cross and Henry Woodhouse, governors, and R. C. Bolling, a member of the Club, who was Captain of the Motor Machine-gun Troop at the first Plattsburg Camp, and who has just completed his course of training as an aeroplane pilot.

General O'Ryan's letter to Mr. Hawley is of special interest, as it gives an inside view of the many details to be considered in taking the first steps to organise an aviation corps in connection with the National Guard. None of the 48 States have funds with which to meet the cost of organising aviation corps, therefore public subscriptions are required.

To meet this need the Aero Club of America instituted the National Aeroplane Fund, to which \$31,000 in cash and seven aeroplanes have been contributed. These funds and aeroplanes have been and are being distributed among a number of States, including New York, Massachusetts, Wisconsin, California, Texas, and Arizona.

Through the National Aeroplane Fund the National Guard of New York has received \$11,250 in cash with which to purchase an aeroplane, train five officers and two mechanics and pay for the general upkeep of the aeroplane for a period of time.

THE R.N.A.S. COMFORTS FUND.

Letters have been received from the R.N.A.S. station at Dover and one in Suffolk acknowledging the receipt of consignments of comforts; and a case of 299 garments was sent to the R.N. Airship Station at Kingsnorth. Special efforts are being made by Mrs. Sueter to send Christmas parcels to the men of the R.N.A.S.

The current balance-sheet of the Fund, which has been prepared by a chartered accountant, will be published next week.

Up to October, 1915, Mrs. Sueter had distributed 22,000 garments, in addition to the work done by Mrs. Samson and Mrs. Thomson.

The Sunbeam Motor Car Co., Ltd., have kindly promised to contribute the sum of £20 monthly.

The following cash contributions have been received: The Sunbeam Motor Car Co., Ltd., £20; the Aircraft Manufacturing Co., Ltd. (employees' collection), £2 18s. 6d.; Miss A. Taylor, ros.; Miss Boylan, 5s.; Mr. A. Reynolds, 2s. 6d. Total for the week, £23 16s. Total to date, £1,431 11s. 9d., nearly all of which has been spent.

Further contributions in cash and kind, which are very urgently needed now that the weather has become so severe, should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

A NEW SCHOOL.

An enterprising company is now establishing a flying school at Bournemouth, and preparations have reached a stage when inquiries from prospective pupils are desired. The aerodrome is situated at the back of Talbot Woods, a mile and a half from the centre of the town. Cars pass within five minutes of the school.

The first equipment of the school will be four Caudron type biplanes built by the London and Provincial Aviation Co., fitted with 35-, 40-, 45-, and 60-h.p. Anzani motors, the two high-powered machines being passenger carriers. Two machines have actually been delivered, and the other two are almost ready.

Mr. F. E. Etches, who was manager to the late Mr. Gustav Hamel, and later to Mr. Frank Goodden, has been appointed school manager, and it is his intention to limit

TECHNICAL TERMS ILLUSTRATED.



Climbing.

the number of pupils to about 20 at a time, thus ensuring that those receiving instruction will receive plenty of practice.

It is pointed out by the proprietors of the school that the Bournemouth district is eminently suitable for flying, owing to its freedom from high winds and particularly from fogs.

Special permission has been obtained from the authorities for flying to be done fifteen miles north and west of the aerodrome, and five miles east, so that pupils who care to arrange for extra practice after they take their certificates have plenty of scope for further aeronautical exercise. The fact that the aerodrome is not occupied by any other schools should be an inducement to the pupil who takes flying seriously.

Inquiries should be addressed to the Bournemouth Aviation Co., Talbot Village, Bournemouth.

AN ACCIDENT IN THE NORTH.

Arthur James Stephens Inglis, aged 23, only son of Mr. and Mrs. Malcolm Inglis, Lancaster Crescent, Glasgow, died at Lancaster Infirmary on Saturday, December 11th, from concussion, following a motor-cycle accident. He was approaching Carnforth with Mr. Coats, of Paisley, a fellow-pupil at Windermere Seaplane School, both riding motor-cycles, when the deceased, whose attention was diverted by engine trouble, swerved against a telegraph post. Deceased was educated at Leyton Park, Reading, and was a partner with his father, a well-known leather factor of Glasgow, Leicester, and Northampton.

PITY THE POOR EDITOR.

The editorial telephone is agitated by many and sundry inquiries, but one received the other day reached the limit. The question was, "Ow much will the Gov'tment charge to learn me to fly?"!!! No wonder the Selection Committees in Whitehall occasionally become peevish.

The incident perhaps points to the need of establishing a non-commissioned rank for pilots, because it is quite possible that this particular applicant would have made a very excellent pilot if he had been given the chance.

Another inquiry came from a Russian who had not served in the Russian Army, and spoke English quaintly.

Another Life Saved by "Triplex."

Messrs. The "Triplex" Safety Glass Co.,
"Triplex" Works,
Hythe Road,
Willesden, N.W.

Crown Wharf,
Hayes, Middlesex.
29th October, 1915.

DEAR SIRS,—Referring to our telephone conversation with you this morning. You fitted to our 12-h.p. "Rover" Car, invoice, May 5th, 1914, No. 1174, reference No. 1881, a "triplex" glass screen with speaking hole. As mentioned to you by the Writer he was driving along last week in the Car, when the screen was struck by a bullet; where it came from we have been unable to trace. You will see when you get back the screen that it has been the means of saving his life, as there is no doubt that any ordinary glass would not have stopped the bullet, and from the position in which it entered the screen it must have struck him in the head. Will you be kind enough to get ready another screen to be fitted to the Car in the course of about a week when we send it over to your Works. The Car is at present away in the country, and will not be back before the end of next week, but, to save time, will you make it to exactly the same dimensions as the last, the only exception being that the speaking hole is to be 1 inch longer in the direction of the right-hand side of the Car. We regret to hear that you are unable to supply the same thickness of glass, and if you still find it quite impossible to do this, we must take the $\frac{3}{4}$ -inch, but we only hope that if another bullet should come along it will be equally well stopped by the $\frac{3}{4}$ -inch glass as it was by the $\frac{3}{16}$ -inch.

We think this is a most excellent testimonial to the value of your "Triplex" glass, and you are quite at liberty to make use of it if you wish to do so.

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NOTICE

To Aeroplane Manufacturers

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BREGUET	DEPERDUSSIN	GRAHAME-WHITE		WRIGHT [SON

SEAPLANES

AVRO	CURTISS	FARMAN, H.	SHORT	WRIGHT
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

He apparently quite expected to be given a commission in the R.F.C., on the strength of something or other he had been told by some Russian official or other in this country.

One wonders whether the aforesaid Selection Committee appreciate the amount of work this office saves them.

THE WEEK-END AT HENDON.

There was a high wind on Saturday and little flying was done. A serious accident which occurred before lunch is referred to in another column.

During the afternoon Mr. J. H. Moore made an ascent on his Caudron. He made slow progress against a 60-mile wind, and at a height of 6,000 feet what progress he made appeared to be in the wrong direction. At lower altitudes he found conditions rather more favourable, but it took him half an hour to return from "somewhere in Hampstead" to the aerodrome.

On Sunday the wind was higher and the temperature much lower. The Hendon mud, whose consistency exceeds that of a Cabinet Minister, was frozen so hard that the visitors who turned up were not obliged to make use of the newly erected pontoon bridge.

Mr. Pashley went out for a very short flight on a G.-W. box-kite, and THE AEROPLANE representative then left, congratulating himself that if the wind was keen and the bar closed, his own name, at any rate, had an encouraging sound.—D. W. T.

SCHOOL AND WEATHER REPORTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Wet	Stormy	Fine	Wet	Stormy	Stormy	Fine
London District	Heavy Rain & Wind	High Wind Show till 3.30	High Fair a.m. Wet, p.m.	Gale	Fair a.m. Gale p.m.	Wind & Snow	

HENDON.

AT THE GRAHAME-WHITE CIVILIAN SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instr. on machine: Messrs. Lewis and Verguill.

Eights with Instr.: Mr. Yates.

Eights or circuits alone: Messrs. Gammon and Phillip.

Machines in use: Grahame-White biplanes.

AT THE GRAHAME-WHITE NAVAL SCHOOL.

Instructors for the week: Messrs. Manton, Pashley, Russell, and Winter.

Pupils with Instr. on machine: Prob. Flight Sub-Lieuts. Ovens and Rockey.

Certificates taken during week by Prob. Flight Sub-Lieuts. Malet and Saint.

Machines in use: Grahame-White biplanes.

AT THE HALL SCHOOL.

The following pupils were out during the week. With Mr. Cecil M. Hill: Capt. Grey, Messrs. Dresser, Mann, Redford, Stirling and Shum. With Mr. John Drew: Messrs. Arnsby, Wooley, Ormerod, Millburn, Cosgrave, Chapman, Neal, Le Coq Moir, Lieut. Cooke, Collins, Ridley.

Machines in use: Hall and Caudron Government type tractors. The less said about the weather the better.

AT THE BEATTY SCHOOL.

Instructors for the week: Messrs. G. W. Beatty, W. Rochekelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, L. L. King.

Pupils out during week: Messrs. Baker, Barrow, Begg, Brantford, Collett, Drysdale, Gayner, Godfrey, Hughes, Kirkwood, Martin, Owen, Podmore, Thompson, Halford-Thompson, Williams, Young, d'Allesina, Sellars, Aoyang, Wainwright, Baldwin, Byrne, Overton, and Savill-Onley.

Certificates were taken during the week by Mr. Kirkwood and Lieut. Gayner, and three further pupils are awaiting favourable weather to go through their tests.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

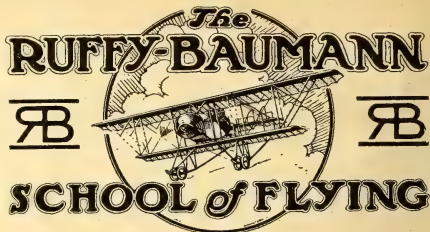
Instructors for the week: Messrs. Ed. Baumann, F. Ruffy, A. Baumann, and Winchester.

Pupils with Instructor: Messrs. Hoskyn, Bolton, Hamtiaux, Pauli, Cox, Yiule, Laidlaw, Launoit, Cuthbertson, Dobson.

Pupils doing straights or rolling alone: Messrs. Tomson, Cole, Griffith.

Pupil doing eights or circuits alone: Tomson.

Machines in use: 60- and 50-h.p. Caudron type dual-control biplanes.



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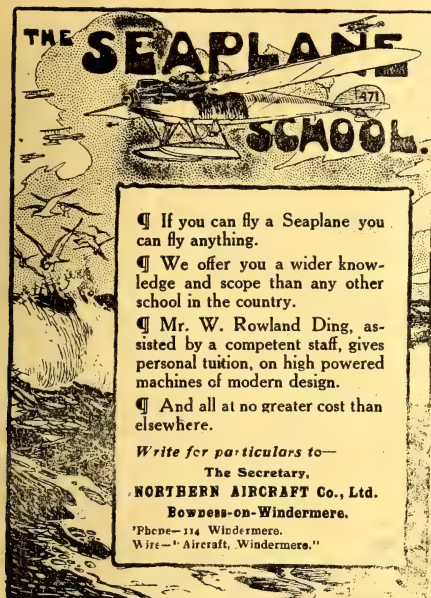
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R.N.A.S. COMFORTS FUND.

As the result of recent cash contributions and parcels of ready-made garments received by Mrs. Sueter it has been possible to dispatch two cases of comforts to a kite-balloon section at the Dardanelles. Consignments were also sent last week to an R.N. air station at Dover, to a certain air station in Suffolk, to Felixstowe, and to a new airship station on the South Coast.

MAGAZINES FOR THE R.N.A.S.

Mr. A. F. de Moleyns, of Foundry Cottage, Haslemere, Surrey, begs to thank a Hampton Court reader of this paper, who prefers to remain anonymous, for a parcel of magazines sent him for the use of the men at an R.N. air station in France. Further supplies of magazines and light literature will be greatly appreciated.

FOR PRISONERS OF WAR.

The following further contributions to Lady Helmsley's and Mrs. Rowton's fund for prisoners of war in Germany are hereby acknowledged:—From the employees of Vickers, Ltd., Weybridge Works, £5; from the employees of Vickers, Ltd., Bexley Heath Works, £3 3s.

REST AFTER LABOUR.

It should be noted that the Beatty School will close from Christmas Eve to January 2nd. The personnel of this school have worked with assiduity, ever since the outbreak of war, training pupils for the Services, many of whom have since distinguished themselves on active service, and Mr. Beatty feels that all hands deserve a rest.

It is hoped, therefore, that enthusiastic pupils will accept the break with indulgence.

EXPERENTIA DOCET.

It should be noted that the three highly interesting and excellent photographs of the twin-Anzani British-built Caudron, published last week, were taken by Mr. F. N. Birkett, of 97, Percy Road, Shepherd's Bush, W. Mr. Birkett's selection of aeroplane photographs and "pilot portraits," as he calls his series of aviators' photographs, is unique, and the skill which in past years placed his work in the front rank among motor-car photographers has gained for him the undisputed first place among aeroplane photographers. Firms who wish to possess pictorial records of their new machines or new fittings will find it well worth while to get him to photograph them, even if the job means fetching him from a distance, for the photographing of aeroplanes is an art in itself, requiring considerable experience if a good brilliant picture is to be obtained, and Mr. Birkett has had more experience than has anyone else in his own line of business.

ANOTHER EXTENSION.

T. W. K. Clarke & Co., Ltd., the well-known propeller makers, have now opened new premises at Kingston-on-Thames, where they are engaged on important Admiralty and War Office contracts. In addition to the propeller business, the firm is now making metal fittings and under-carriages, etc., for aeroplanes, and, of course, the model work in which they have excelled for so long still continues to have attention.

PRACTICAL SCIENCE.

Patriotically minded students at the Gordon College, Geelong, have obtained permission from the Defence Department to build a B.E. biplane to the regulation drawings. It is proposed that the machine shall be covered by the staff at Werribee after the College has built the framework.

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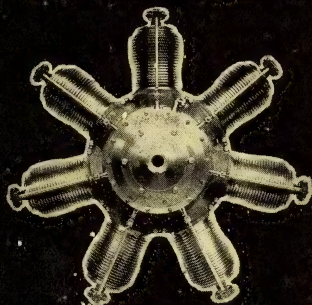
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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

Touching this valve affair, please forget for once the mere inconsequence which the English middle-classes mistake for a sense of humour, and regard it in the serious light of its supreme importance as a trifle. This cylinder-shifting-because-of-a-leaky-valve, may not matter with a whole gang of mechanics waiting ready, somewhere behind the touch-lines of a campaign. Whose dependence—all of a piece with the caddy-idea of the cumbrously vulgar distraction of the Lowlands: the gillie-notions of the Mac-Stubbs and Macsheenies whose presence blights the heather—is not really a winning factor. This war, I dare hope, is teaching us the better use and purpose of a man, and his time. And so, how to use our own hands to sort our own gear like simple gentlemen, Corinthian-bred. So we, that should be our own mechanics at need, must scrap whatever trickeries waste our time; it may be dangerously. A nice thing, truly, to be brought down by a failed valve in some wood behind enemy lines, with a cylinder to shift before you can change it and get away. Not for you, temporary wart, but for the Army's aeroplane thus endangered, still more for the delivery of your bit of information upon which the safety of that Army, the success of a campaign may even depend. On what else was Mons saved? Your use, while it lasts, is not to be wasted: and your D.S.O. can wait. So, while this is for your reflection, it is still more to the address of the man who sent you out, and most of all to those, ever so far behind him, with whom the choice of the motor rests.

THE GENERAL ASSEMBLY.

And now, as to getting the Rhône together again. The book says, Merely reverse the process of taking it to pieces, working backwards. So you can, to a great extent. You should certainly do so, as to dropping in the crank-shaft—male or tail-end and its bearing—into the latter's housing in the crank-chamber to begin with; and then the lower half of the master grip: next the connecting-rod-shoes—assuming, of course, the reassembly of each piston and its rod—and then the upper half of the master grip. But you must make very sure that each rod has gone through the right insertion-entry of the crank-chamber for the respective cylinders. And since the pistons cannot be left uncovered, the cylinders had better be run in next. For this reason—as you have not three hands—it is best to drop the female member of the crank-shaft loosely into place, for its weight to keep the upper half of the grip down on the lower half, until the cylinders are set in to take the weight of the rods and pistons. In assembling the rods and grip in the nine-cylinder model, however, the master rod—i.e., the innermost one—should, of course, go in first; so see that its mark corresponds to the mark on the grip-flange. It is No. 1, of course, so both in the nine- and seven-cylinder models, keep that cylinder on your left hand—so to say at 9 o'clock—and the rod at full instroke with the grip set to correspond. Then work the shoes in clockwise round, as they belong in their respective grooves. For these reasons, never rotate the motor after you have once got cylinder No. 1 in position.

LESSER DETAILS AND ADJUSTMENTS.

However, as soon as the cylinders are run in, take out the female half of the shaft, and connect up the halves of

the grip, setting the grub-screws home first, before setting in the cotters of No. 1 connecting-rod to finish. Then set the inner drip-feed pipe in place, before replacing the female member of the crank. Getting the shaft centres of this last in absolute axial relation with the main shaft before locking up the screw bolt, will be the most difficult part of the job; so the best guide is to get the two drip-feed quill-pipes in line with one another. This done, the valve gear can go on as it came off. Final adjustment of the tappet spindles, however, had better be deferred until the motor is finally mounted in the aeroplane. For this reason—as you may have to rock the motor and humour the valve-gear a little—the beak-shaft, with this exception, may be replaced last in the assembly. In any case, the motor should be mounted in the aeroplane before the magneto, the oil-pump, or the carburettor are replaced.

Before any of this is done, however, the induction pipes should be replaced, and then only—on no account before—should the cylinder locking rings be set home.

For the tappet spindle setting, turn the motor counter-clockwise, bringing the cylinder of the one under adjustment up to the vertical, each in turn. This position—if the valve gear has gone in right—should correspond with full compression with both valves on their seats. Now screw the spindle in and out, so that as it pushes the bell-crank lever upwards, the tip of the rocker on the exhaust valve is nearer contact with its valve stem than the other tip is to the inlet valve; twice as near, in fact. This can be done with half a turn of the spindle either way, so the eye of its head will go squarely on the stub of the lever arm into the groove of which the locking ring may now be set. At any rate, no matter what valve changes, or other adjustments, take place, the difference of contact-play between one rocker-tip and the other, as to their respective valve-stems, should always be just two millimetres on the side of the exhaust-valve.

AS TO THE IGNITION.

In this case the adjustment to assure the correct firing moment is, on the whole, rather easier than usual, owing to the star-formation of the motor with an odd number of cylinders. Thus, the motor being duly installed in the aeroplane, one begins by turning it counter-clockwise—that is when facing it—so that cylinders Nos. 1, 7, and 4 form a Y, with No. 4 as the vertical limb of that letter. Now it is just at this position—in which, recollect, the valves are shut and the piston coming up to full compression in No. 1—that the spark is due to occur, and consequently the break between the two platinum points of the magneto; and the magneto being at this break-point it is sufficient to get the armature (vertical) in that position, and engage the gearing to correspond.

Still, before fastening the magneto finally by its two bands, rotate it slightly to right and left by its spindle so that it comes exactly to the break of the two platinum points; and so set, the ignition will accurately represent a lead of 26 degrees. In the 9-cylinder model it is set in the same way; only to get it right for No. 1—and hence for the other eight—rotate the motor so that No. 7 comes slightly below the horizontal position, while No. 5 makes an angle with the vertical slightly greater than No. 7 does with the horizontal.



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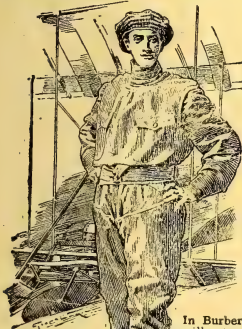
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LUBRICATION AND CARE GENERALLY.

As we have already seen, the lubrication of the Rhone is positively effected by a gear-driven oil-pump; and as this pump is of the plunger type with a valveless rocking cylinder, it cannot get out of order. Still, before starting up, one must give the pump a load if only to drive out the air its tiny body may contain; so, opening the tap from the oil-tank, take out the plug—placed on the upper part of the pump-body—and thus allow the air to escape, if any; in fact, do not replace the plug until an actual overflow of oil from its hole shows that the last bubble has escaped.

Now notice that the oil thus delivered by the pump travels, in the first instance, by outside piping to the entry to the motor, and in circuit, so to say, with a sight-gauge. This gauge is half-filled with air; and consequently each pump-stroke reacts on this air, producing a definite pulsation. Obviously, then, the number of pulsations is in constant agreement with the number of motor-revolutions; and so the dial, showing the pulsations, naturally shows the r.p.m. of the motor.

This is the general system "on the book": but as the length of oil-piping varies in different installations—and in some is of considerable length—take care to fill it completely with a syringe from the disconnection-point nearest to the tank, before setting the motor going. Then so soon as the motor is running, look carefully at the pulsation-gauge to see if they are occurring regularly; and if not, stop the motor at once until you have found out the reason; which—short of the eternal blob of dirt or wad of cottony material—is generally an insufficient pump-load or an air-lock in the piping due likewise to inadequate filling.

Use only the best castor-oil, and no substitutes however insignificantly offered: and, needless to say, before starting and after every lengthy stop, profusely lubricate all external parts of the valve-gear.

RUNNING INSPECTION.

When the motor has been running for several hours flying, you will probably notice that the uppermost five or six cooling-flanges on each cylinder are blueing, especially behind, under the induction port. Nevertheless, that is nothing to worry about so far, as this part, after all, represents the outside of the combustion-chamber. But if, on the contrary, the lower flanges are turning blue and mud-colour, there is trouble toward in that cylinder, probably through some failure of lubrication; wholly abnormal and not to be expected; but still to be dealt with.

You may as well begin by looking for some carburettor defect that has caused over-feeding of petrol or some lubrication-choke that has set up starvation. Not in one case in a hundred will a valve or the ignition be at fault, as the motor would, in that event, have given unmistakable signs to that effect. But off that particular cylinder must come. The book says you can do it in three minutes—which is no doubt true, if it has got cool, or you have very thick gloves on, but no matter—but having dismounted the cylinder, look carefully over the piston and its rings.

The latter should be bright and shining with oil; and all their surfaces as well as the piston head should be clear of carbon. Still, they may have turned so as to let the hot gases down; so rotate their opening points to the correct position; and if by chance any part of a piston ring does not seem to be closing properly, wash it out well with a squirt of petroleum.

Then, again, if after a certain number of hours running, the compression weakens, grind the valves; employing the long screwdriver: and at the same time, since the cylinder is off, scrape off any carbon that may have deposited on the heads of the pistons or combustion-chambers, washing out well to finish with kerosene and soda, and drying off with a dash of petrol. The special directions given by the makers of the carburettor and the magneto will tell you all about their little foibles; so it suffices simply to deal, so far, with the proper care, nursing and rearing of the Rhone in the way it should go *en enfant bon et gentil*.

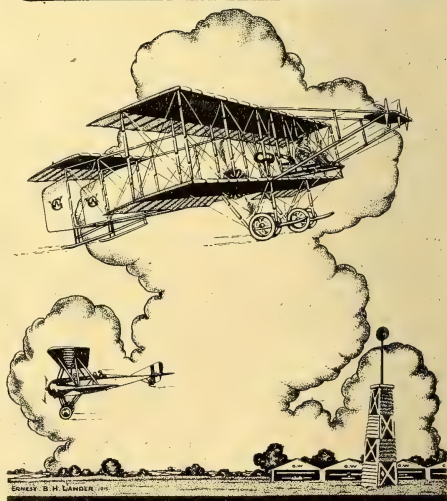
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C. G. Grey

Vol. IX. No. 25

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ON AMERICAN NAVAL AERONAUTICS.

When America does have a first-class war, as prophesied in the first article on that delectable continent, it is bound to start as a sea war, even if it extends to being a land war afterwards.

A war with Canada is hardly within human possibility. America's system of "peaceful penetration" in Canada is welding the two peoples into one racially if not politically. Western American farmers having exhausted their own lands by getting all the wheat possible out of them, and neglecting proper rotation of crops, are peacefully repeating the process in Canada. Business men from the Eastern States and Middle West are running factories in Canada as branches of their own businesses, and are making and selling wooden nutmegs and gold bricks impartially in either country. Bad hats further West steal horses without prejudice on both sides of the border. The two peoples speak the same language, with the same deviations from English. It even comes about that some Canadian officers in the British Flying Services seem to have difficulty in showing the precise delimitation between their American and Canadian nationality, and seem to be either or both or neither at will. And some of the said American-Canadians have proved uncommonly valuable acquisitions—be it said.

The mere fact that the two countries have separate political existences practically precludes any possibility of civil war, for they cannot reach fighting point over election quarrels, as may quite possibly happen in the United States on their own account.

Therefore, Canada can be counted out as a possible belligerent; unless, of course, the British Empire is some day conquered by some greater European Power, which in its search for complete World Dominion uses Canada as a jumping-off place into the richer American Republic. But I fancy that if the British Empire ever began to run to seed in Europe to such an extent Canada would join the States as part of the great Republic of America—which is not the same thing as the American Republic.

The only other direction from which the States can be attacked by land is from the South, and I cannot see anything on that horizon, even with a telescope, which is going to raise more trouble than Uncle Sam can stop by slapping it and putting it to bed. A bunch of played-out Dagos and half-breed Indians, even if armed, offered, and driven by Germans, are not likely to amount to much against genuine American troops, if the latter are properly trained. Therefore, America's big war, whether of aggression or defence, must begin at sea.

The prospects of a war with Europe are remote. I am told that President Wilson never said that America was "too proud to fight," that phrase being a distortion of his real words by some English news agency or newspaper, a distortion which is typical of the ordinary English journalist's attempts to be funny at someone else's expense. But America naturally does not want to fight when she has no real quarrel with any of the

present belligerents, and can make billions of dollars out of all of them. America will fight, and fight well, when occasion arises, but not in this war. Nevertheless, she may be landed into a war with some European Power in the next twenty-five years or so, and it is the duty of her political leaders to prepare for such a war.

AN ASIATIC WAR.

The prospects of a war with Asia are by no means so remote. Of course, one would not suggest for a moment that our charming, smiling, polite little friends the Japanese would ever come to blows with the Great American Republic, the land of freedom, the friend of all small nations, the giver of personal liberty to the Cubans, and the Porto Ricans, and the Panamense, and the Philipinos and Jack Johnson's ancestors—and the future liberator of the Mexicans, and Guatemalans and Venezuelans, and other assorted mongrel tribelets, as a guarantee of the efficacy of the Monroe doctrine, and as an example of the universal application of Standard Oil on troubled waters.

But curious things happen in the world. Shakespeare wrote of one Iago, who could "continue to smile and smile, and be a villain," and one never knows when another Asiatic Napoleon may arise of the quality of Timoor, or Kublai Khan, or Attila. In 1789 no one had ever heard of Bonaparte, except a few artillery officers. In 1800 the world rang with his name. Similarly, in 1926, the Western Hemisphere may be fighting for its life against some despot who is now a student in some Chinese college or Japanese art school, or even a draughtsman in an American aeroplane factory for all one knows, for it is extraordinary how assiduously the Asiatic will work in a subordinate position to acquire knowledge of the inner working of things. The German is the only person who approaches him in this peculiar kind of thoroughness.

However, Whether the blow comes from or goes to the West or the East it must be struck by sea. If America is wise, when she sees a blow coming she will hit first and hit hard, on the good old principle that:—

"Thrice bless'd is he who hath his quarrel just,
"But more so he who gets his blow in fust."

So America may be blamed by the world as the aggressor, but that does not matter so long as she wins.

Anyhow, assuming that the U.S. Navy will have to receive or strike the first blow, that seems sufficient reason for America to have as big a fleet as any nation in the world, and that being so it stands to reason that she must have a proportionately big Naval Air Service.

NAVAL OPERATIONS.

Now, for practical purposes there are only two Naval Air Services in the world from which America can learn anything—the German and the British. From the Germans America can learn much about the uses of airships, and a little, but not much, about seaplanes. From

England she can learn a lot about the use and misuse of seaplanes, and still more about the handling and mis-handling of the personnel.

It so happens that a good many American aeroplane manufacturers have had dealings of one kind or another with the British Admiralty, and if the U.S. Navy Department will just climb out of its office chair and go and interview those manufacturers it will learn a whole heap of curious and interesting things about British official methods. Some of the said methods might be imitated with advantage in the States, other of them could, with very little alteration, be used as humorous incidents in a musical comedy.

The late Sir W. S. Gilbert's comic opera, "H.M.S. Pinafore," could be rewritten quite easily as an "Airy Service Comedy" with music. The "Ruler of the Queen's Navee" who "polished up the handle of the big front door," and who advised all and sundry to "stick tight to your seats and never go to sea, and you'll all become rulers of the Queen's Navee," could be paralleled by gentlemen who have never taken the air (except in a motor-car), and control the destinies of thousands of men and millions of pounds. Men who before the war were glad of a couple of pounds a week as automobile salesmen, or in some equally humble capacity, are now, without even having "been to see the war" or having been in an aeroplane, strutting around covered with gold stripes and issuing orders to men who built aeroplanes and flew them six years ago.

Meanwhile, men who really know something about internal combustion engines and aeroplanes, and, incidentally, know how to behave as gentlemen as well, are air mechanics, or petty or warrant officers. They, of course, are the "Ralph Rackstraws" of the comic show, and I am always watching to see whether the proper Gilbertian turn will be given by promoting them suddenly to positions of immense importance, just as in the opera—when it is discovered that Rackstraw and the Captain of the "Pinafore" were mixed up as babies and changed places—Ralph becomes a Post Captain and the Captain an A.B. The trouble is that some of them would not even make decent A.B.s.

A CLEAR START.

If the U.S. Navy Department wants to build up a Naval Air Service worthy of the American Nation let it start straight at the beginning by making the Air Service an integral part of the Navy, the same as the Submarine Service, or the Destroyer Service, and let all its doings be equally under the complete command of the Senior Naval Officer of the district. It is no good letting an Air Service get out of hand by permitting it to carry out its own operations in its own irregular way. Everything must be done decently, and in proper Navy fashion.

It will be necessary, of course, to start in and educate a lot of the senior officers into the uses of aeroplanes and to indicate to them pretty clearly what it is that aeroplanes cannot do, as well as what they can do.

The day will come when every ship of war above the size of a small cruiser will carry a couple of aeroplanes on board, for small scouts for short distance reconnaissance can be made to take up very little more room than a torpedo, and they can be launched from a kind of catapult gear in the way I discussed in print in 1911—a method which I notice the Press of the world at large has just discovered, because it has actually been done off a U.S. ship. It is, of course, only a variant of the old original Wright launching rail, from which the earliest Wrights left the ground, and of the launching cradle tried about three years ago by my respected friend, Mr. Glenn H. Curtiss, with one of his famous flying-boats.

SEAPLANE CARRIERS.

The time for equipping all warships with aeroplanes has not yet arrived, for if it were done now there would be a danger of senior officers demanding the impossible from their aviators. Moreover, a couple of officer-aviators and a squad of aeroplane mechanics on a warship would at present be merely in a ship's company but not part of it. The proper plan at present is to tell off a seaplane-carrying ship—more commonly known in the British Navy as a seaplane-carrier—to each squadron of warships, and for the Air Service officers on each of those ships to be under the immediate command of a senior Air Service officer, who will take his orders from the senior Naval officer of his squadron.

In this way, when the Admiral or Commodore wants an aerial reconnaissance made, he will request the seaplane-carrier to send up the necessary aeroplane if possible. And it will be for the officer commanding the seaplane-carrier to say whether the job is possible or not.

The seaplane-carrier should be as fast a ship as any in her squadron, and she should be equipped thoroughly as a floating aeroplane workshop, capable of rebuilding any smashed aeroplane or engine from spare parts carried on board. For this reason each of these ships should carry as few different types of aeroplanes as possible to avoid complications over spares. One type of small very fast machine for scouting and one type of large high-powered machine, either for bomb-dropping, torpedo-carrying, long-distance reconnaissance, or for fighting with enemy air-scouts, should be enough for a each ship.

It is impossible as yet to standardise on two types, one big and one small, and so one seaplane-carrier may carry two types entirely different from those carried by another, but no ship should carry two or three different types of small machines or two or three different big ones.

ONE MACHINE ONE PILOT.

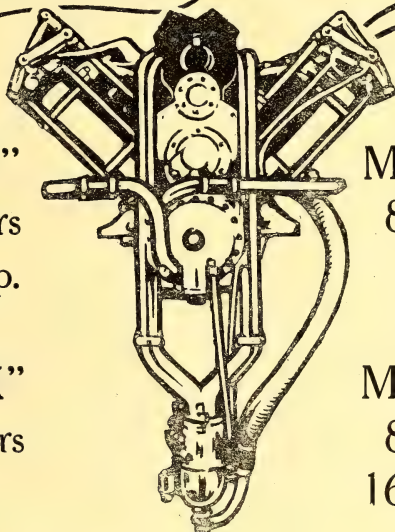
It will be well, at first, to keep flying officers rigorously to one type of machine, because a "one machine" pilot is always a better flier on his one type than if he is allowed to play about on all sorts of different machines, so that he becomes a jack-of-all-trades and master of none. There are, however, certain peculiarly gifted and experienced fliers who can fly any type of machine with equal ease, and every effort should be made to get together a staff of such pilots for test purposes, to try out the various makers' machines and pronounce judgment on them.

This staff of official testers should be as large as possible, to avoid errors of judgment and mistakes arising from personal prejudices. Some pilots prefer "tractors" to "pushers," some hate "flying-boats," and prefer pontoon floats. Some excellent pilots always swear that the last machine they have flown is the best they have ever been in, which may be true, though their enthusiasm over a new toy is apt to warp their judgment on its minor qualities. The great thing is, never to take one man's opinion on anything, least of all an optimist's or a chronic grumbler's. Take the opinions of half a dozen men who know their jobs and weigh one against the other, allowing for each man's known prejudices.

Much harm may be done by relying too much on the personal opinion of one or two crack fliers. A multitude of aeroplanes may be ordered of a type which only crack fliers can handle, or a good steady going machine, eminently suitable for the average pilot, may be condemned because it is not amusing to the men who like something trickier on its controls:



Model "S"
6 cylinders
60-75 h.p.



Model "OXX"
8 cylinders
100 h.p.

Model "OX"
8 cylinders
90 h.p.

Model "VX"
8 cylinders
160-170 h.p.

IMPROVE THE FLYING
of all wide speed-range Aeroplanes, because
they have a throttle range of from 300 to
1600 r.p.m.

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ERNEST B. H. LANDER, 1915.

BEWARE SCIENTISTS.

Above all things care should be taken to prevent the Aeronautical Bureau of the Navy Department from being overwhelmed by alleged scientists. The plain simple-minded sailor is apt to be awestruck by a voluble young gentleman who plays tricks with a slide-rule and works out in a couple of seconds complicated sums in cost of aircraft or strains on planes which the sailor would take hours to work out by counting on his fingers and making notes on paper.

Unfortunately, the slide-rule expert is frequently wrong, as in the case of a certain American aeroplane—a Curtiss biplane to wit. This was calculated by unfriendly "experts" to break under a load of about twice that which it sustains when flying normally in still air. Naturally, every sudden gust increases the load enormously, and every sudden alteration in the direction of the machine does likewise, consequently, a wire or a strut or a spar which would only stand twice its normal load (or which had only what is called a "factor of safety of 2 to 1") would be unsafe.

To prove whether the scientists were right or wrong, the machine was turned upside down, and was loaded with sand spread over the wings till it broke. When it did break, it was carrying six and a half times its normal load—which made it appear fairly safe with a factor of safety of $6\frac{1}{2}$. The machine was not faked up in any way for the test, but just a plain standard type, and similar machines loop the loop every day with exemplary neatness and regularity, so apparently the scientist who endeavoured to "crab" the machine was away out in his calculations, or else had forgotten to reckon in certain wires, or something of the sort.

SUITABLE TYPES.

For launching from a ship it appears that the flying-boat type originated by Mr. Glenn Curtiss has immense advantages, for it sits snugly on a launching cradle and is fast when aloft owing to its having no landing-chassis and floats to pull through the air. When it returns to the ship it squats on the water alongside and is hauled aboard by a derrick. Doubtless, in time we shall evolve some device, like the Blériot landing wire, which will enable a machine to alight on a ship's deck.

But in getting off the surface of a heavy sea the flying-boat is handicapped by its wings being so close to the water that the sea washes over it. Then the seaplane with twin floats scores, for its wings are high enough up to be clear of the waves, and to take the lift of the wind. Also, it keeps its crew reasonably dry after they have alighted, whereas the flying-boats are

so low down that the occupants are drenched if there is any sea at all.

In time, as the machines become larger and larger, we shall, no doubt, produce a flying-boat as big as a modern destroyer, which will cruise on its own bottom in company with the Fleet, folding its wings when on the water, and only extending them when it wants to hurry. We may also have the Super-Marine type, shown in model form at Olympia in 1913, which can shed its wings altogether and become a seaworthy motor-boat if compelled to come down on the water. But that is still some distance away in the future.

Meantime, very good work can be done with existing types of aeroplanes if the U.S. Navy's Aeronautical Bureau is properly organised under Naval discipline, and kept free alike of self-estimated "experts," political grafters, and would-be scientists.

COAST DEFENCE WORK.

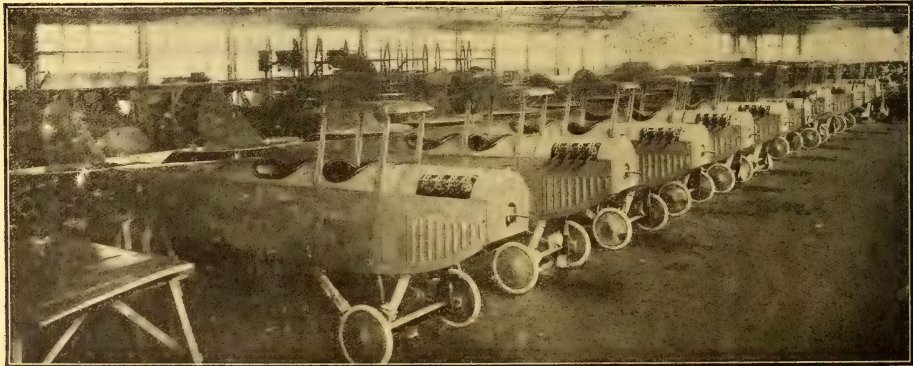
Part of the U.S. Navy's job, presumably, will be the running of coast defence air stations, whence the coast line will be patrolled on the look-out for hostile shipping arriving by air or sea. These stations should be under the command of the local Admiral commanding the sea defence of that stretch of coast, and should not be separate commands of their own.

Also, they should be arranged in groups, each station holding a "flight" or a "squadron," according to its size, with the adjacent stations along the coast which constitute a group all under a wing-commander. Each station should have a proper launching slip for seaplanes.

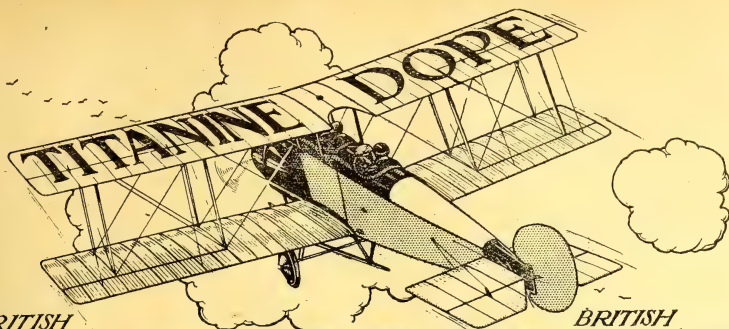
America is in the happy position of being able to start with a fairly well-developed science of Naval Aviation, so her politicians will have no excuse if her coast defence grows up in the state of muddle prevalent in Europe.

THE USEFUL MARINE.

I venture to suggest further that land-going aeroplanes belonging to the U.S. Navy should be made entirely the affair of the Marines. In fact, there are quite fair arguments in favour of putting the Marines in complete charge of the coast-defence air-stations, apart, of course, from the schools on the coast where *pukka* Naval officers are taught to fly seaplanes. There might come a time when coast-defence air-stations would have to co-operate with the Army defending the coast against an enemy landing, and, in that event, officers and men who are more than half soldiers by training would do better work than sailors who could not understand the



A Few Curtiss Tractors for the Allies, in course of erection.

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MOST IMPERVIOUS

DOPING No. 5.

GLOSS. Experiments have shown that a Dope protected by a suitable Varnish or Paint, preferably the latter, has its life considerably prolonged. Now, as most Dopes dry with a glossy finish, it will be obvious that they do not afford such a good hold for Varnish or Paint as does a Dope which dries with a matt or dull surface.

A glossy surface is also misleading in that it gives one the idea that a greater deposit of Dope exists than is really present, and, whereas the surface may be pleasing to the eye, it may be found, when examined with a powerful glass, to be full of small "pin-holes," in which case it does not prevent penetration by the finishing coating.

Manufacturers desiring to encourage the production of a perfect Dope should reconcile themselves to do without the pretty glossy finish to which they have been accustomed in the past.

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manœuvres, methods, or even the orders issued by soldiers.

Apart from which, in my own experience, the smartest, neatest, best disciplined, and best organised air-stations I have seen have almost always been run by Marines, a fact which may be attributed entirely to their military training.

Possibly Naval officers flying seaplanes might be attached to these coast stations, if a free-born American N.O. did not object to taking orders from a mere Marine.

AIRSHIPS.

As to airships, as I have said, America can learn more from Germany than from England—thanks to political stinginess in the past, which prevented the British Navy from developing airships as well as seaplanes. If one believes the English Press—which I do not—the only use of German airships is to come over the North Sea in the dark and slaughter women and children. As a matter of fact, they have proved themselves of high military and naval value.

Ever since the beginning of the war Zeppelins have patrolled the German coast from Russia to Denmark and from Denmark to Holland. They have been most valuable scouts with the German Fleet—or, rather, with such portions of it as have ever come out into the Heligoland Bight. The crew of one Zeppelin got the Iron Cross for a co-operation with submarines which resulted in the torpedoing of H.M.S. "Cressy," "Aboukir," and "Hogue."

Though the actual damage they have done in England is small, none the less the necessity for keeping large forces of anti-aircraft guns and their crews, and a certain number of aircraft, round London instead of sending them abroad means that Zeppelins immobilise a large number of men and a certain amount of material at the cost of an occasional raid, which seems a fairly cheap way of doing it.

Although British Naval airships do not amount to much they have done quite good work in patrolling the Channel, looking for mines and submarines, and even at times making little raids in the dark over the German lines in Flanders. Taking it all round they have paid for themselves quite well.

Therefore, America will do well not to neglect the development of airships. It is true they are expensive to build, and that while in commission they consume more gas than a Chataqua lecturer could spout in the time, but they have their uses when aeroplanes cannot be used.

Recollect that hundreds of aeroplanes have been built for one airship, and that while the airship may be in its

twelfth generation of evolution, the aeroplane is about at its two hundredth generation. By the time the airship has evolved through as many generations it may be giving the aeroplane some trouble. The airship may be a clumsy mammoth in size and appearance, but do not run away with any notion that it is going to become as extinct as the mammoth in a few more generations. Therefore, keep tab on airship developments. An airship may fly the Atlantic before an aeroplane even yet.

COMMERCIAL USES OF HYDRO-AEROPLANES.

In conclusion, let me repeat what I have said before, America is, above all other countries, the land for the commercial exploitation of aircraft. Just as her vast areas without roads make the use of land-going aeroplanes a business proposition, so, and even more so, her enormous rivers and lakes make hydro-aeroplanes—or seaplanes, or waterplanes, call them what you will—a still simpler business proposition. Who is going to be bothered doing a 100-mile steamer journey down a river in seven or eight hours when he can do it on a "hydro" in an hour and a half, and come back the same day, at the cost of running an automobile? Who wants to train or motor fifty miles round the shores of a lake when the aerial ferry will take him across direct in ten minutes or so?

Flying is just like motoring, it is only a case of getting enough people to go in for it, and it will become cheap and easy. At present it is expensive, because there are only a few landing grounds many miles apart, and repairs are expensive. It ought to be cheaper than motoring, because there are less wearing parts on an aeroplane, and there is no tyre-bill to speak of.

Flying will first become popular through the big passenger-carrying aeroplanes which will take a number of people for a decent journey across country for a couple of pounds apiece, instead of two pounds for only giving one a stagger round an aerodrome on a box-kite, as at present.

In Europe the first regular aeroplane line will be between Dover and Calais, and it should start soon after the war. Perhaps a Brighton-Dieppe line may be before it—one never knows. But that is how flying will become a regular mode of conveyance. People will not want to be seasick for an hour or more in a boat when they can fly the whole journey in half or a quarter the time and not be seasick.

It will be interesting to see whether Europe or America first makes a plain business conveyance of the aeroplane. I think I am backing Europe to start work first, as usual, and for America to make it a business proposition, also as usual.—C. G. G.

IN THE HOUSE.

In the House of Commons on December 15th the following matters arose:—

Dr. MACNAMARA, in answer to Mr. KING (R., Somerset, N.), said it had been decided that the defence of London against hostile aircraft was to be taken over by the War Office. It was anticipated that the transfer would take place shortly. As regarded Sir Percy Scott, who was in charge of the gunnery defences of London, the question of his continuing that work would be one for determination when the transfer took place. Pending such transfer, he remained in his present post.

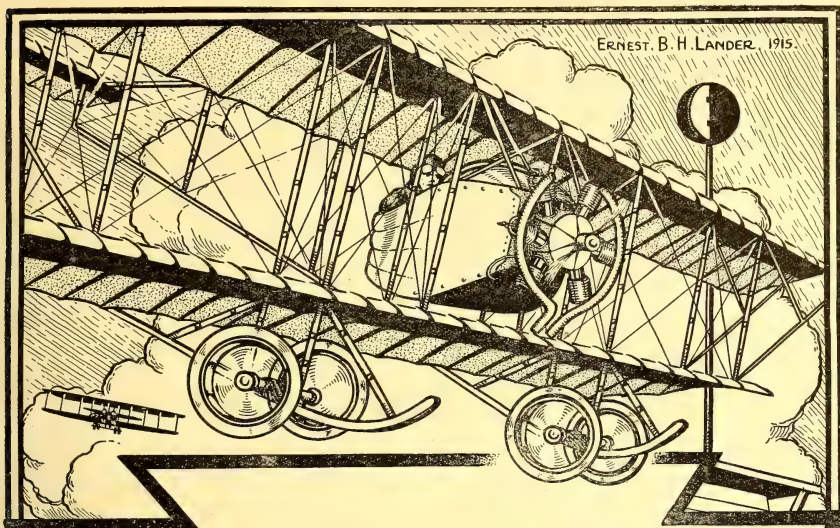
Not a very enlightening remark, and grammatically incorrect. If the transfer had been "anticipated," it seems probable that Sir Percy Scott's position would have been decided. As the transfer was only "expected," it is proper that the decision should be held over. Dr. Macnamara was, one believes, connected with educational

affairs at one time, so one would expect him to use the Anglo-Latin language with some approach to accuracy, though, of course, Parliamentary life does not tend towards exactitude of speech.

Sir J. D. REES (R., Nottingham, E.) asked the Under Secretary for War whether any decision had been arrived at regarding Sir Percy Scott.

Mr. TENNANT: I have already indicated that Sir Percy Scott may not be available for this duty, but that matter is still under consideration.

One would think from the continual discussion of this affair that Sir Percy Scott was the only gunnery expert in both the Services. These good Parliamentarians still seem to ignore the question of whether a Naval gunner is really at all suitable for the job of anti-aircraft gunnery. It has already been pointed out in this paper that Naval gunners are concerned only with targets on their own level. Also, any Field gunner who has watched Naval gunners at work on land, knows that he knows more



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On January 1st, 1915, we had 3 instructors and 4 machines. On January 1st, 1916, we shall have 6 instructors and 10 machines, our equipment including 6 Caudron machines and 4 Wrights.

Sixty per cent. of those who have taken their certificates from this school have secured commissions in the Flying Services.

We have broken the record for the largest number of pupils to have taken their certificates in any one week at Hendon.

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about the job than they do, and their shooting at hill positions—e.g., at Ladysmith—would make a Mountain gunner weep. And finally, any anti-aircraft gunner from Flanders knows more about shooting at aircraft than all the Naval and Military "experts" at home put together.

In the House of Commons on December 16th the following matters were raised:—

CASUALTIES IN THE ROYAL FLYING CORPS.

Mr. TENNANT (Under Secretary for War) stated, in reply to Mr. JOYNSON-HICKS (U. Brentford), that in all the theatres of war the casualties among officers in the Royal Flying Corps for the three months ending August 31st and the three months ending November 30th respectively were: Killed and died of wounds, 14 and 11; wounded, 22 and 21; missing, nil and 10; prisoners and interned, 18 and 26.

One doubts whether it is expedient at this juncture to publish precisely the casualties in the Royal Flying Corps, for the enemy knows exactly the number of certificated aviators in this country—thanks to the continued publication of certificates granted, and from that can estimate with reasonable accuracy the number of pilots available for active service. If the casualties are also published it is then possible for him to get very close to the number of aviators we can put up against him on any particular front—which is obviously undesirable.

The regular active service casualty lists give him certain data on which to work, but unless the casualties arising from "peace accidents" at home stations and the deaths in home hospitals from wounds received abroad are included the resulting figures are of little value. There is nothing to indicate whether the figures mentioned by Mr. Tennant refer exclusively to the R.F.C. proper or to the theoretical R.F.C. which includes the R.N.A.S., or whether "missing" includes "prisoners"—as seems quite likely, considering how the German aviators let us know the fate of those missing. For once it is possible to agree with official mystifications even by Mr. Tennant.

AIR RAIDS ON LONDON.

Sir G. SCOTT ROBERTSON (L. Bradford, Central) asked the First Lord of the Admiralty how many abortive Zeppelin raids had taken place since the raid on October 13th last; and whether London might now, under existing arrangements, be considered as reasonably safe against these attacks.

Mr. MACNAMARA (L., Camberwell, North): The answer to the first part of the question is none. With regard to the second part, I cannot add anything to the statements already made by the First Lord of the Admiralty both in reply to questions and in the discussion on the Vote of Credit.

This statement may be taken as accurate. If a trawler happens to see a German airship scouting over the North Sea a hundred miles east of Yarmouth or even thirty miles north-east of the Foreland, that does not necessarily mean that it had fell designs on the babes and sucklings of East Ham, or even Bradford, Central.

Whether London is safe cannot be proved till the next Zeppelin raid comes off, and when it does it will probably be on a very big scale indeed.

Mr. ASQUITH stated that Relief Fund grants in cases of distress caused by air raids were only temporary. The Government did not propose to grant special pensions to persons whose relatives had lost their lives or had been permanently injured.

It seems reasonable to suppose that even the most liberal of Liberal Governments would shy at the proposal to pension the relatives of everybody slain by "act of God or the King's enemies"—this habitual juxtaposition of ideas is not without interest—otherwise it would be logically bound to support the whole nation sooner or later.

A WATCHMAN'S NOTES.

What change in this nation's mental attitude will result from the militarisation which is now slowly but safely creeping over England? Change it must, however conservative we may be; so much all will allow me.

I have been assured that one of the *results*, if not one of the things *aimed at* by the soldiering régime, is the growth of one mind and one spirit among those living under it. So one might almost dare to hope to see the birth of a genuine national spirit in Britain—of a national point-of-view, so to speak.

"One-mindedness," though offering less foothold to would-be leaders of the "by-the-nose" or "on-the-string" kind, would mean a grand moral force behind our diplomats; nor need it really affect differences of views on internal questions nor the parties holding them, which often are quite useful as spurs to those out to govern the country.

In the propagation of anything like a national mind we need first to have "caught our hare" which obviously should emanate from a great master-mind such as fitly might be expected to move the ruling spirit of a kingdom's military power. The enlightened naval mind we have had with us so long that we have recognised it and put it on a pedestal and even basked in its rays, when unoccupied, or when suffering from cold in the extremities.

But this military affair is a much bigger thing. To continue the simile we have all to get on the pedestal ourselves and shine. And how we shall shine to the world and in what manner our radiance will go forth is pre-occupying to thinkers. Will it be as the light from a sconce of many candles or as a great headlight from the central power-station of the nation chasing night from the universe?

Whatever may be, we cannot let it be blown out by blustering winds nor snuffed out by petty-minded draughts. Eternal speech-making and the all-things-to-all-men way will, I think, appear inadequate in the light of this national mind and will sink away to the past.

Women can best help to prepare an atmosphere and garnish a house for the new spirit by getting back to their long-forgotten ministering-angel work "en masse"—I had almost written massaging-angel work, for which one reads there is only too great a demand just at present.

Only with such a mind can we honourably await the return of the strong-armed man who from the wide bounds of the earth will come back very expectantly to be the future civilian of England.—T. S. HARVEY.

BY AEROPLANE TO SHOOTING PARTY.

The members of a shooting party on Desdée—not in Flanders—had rather an interesting experience the other day. Just as they were about to commence the day's work the drone of an aeroplane engine was heard in the distance. Soon the machine itself became visible, and, rapidly approaching, it gracefully alighted (why do they always "gracefully" alight?) in a grass park near by.

It appears that one of the shooters, who had a long piece of road between him and the meeting-place, chose this method of journeying to the scene of action.

When the first drive was in progress, the aeroplane rose and circled over the beaters. The partridges, however, seemed in nowise put about, either by the noise or by the appearance of the strange visitor.—W. M. C.

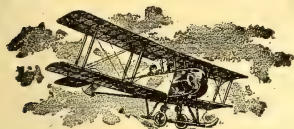
A SPECIAL NAVAL NUMBER.

Next week's AEROPLANE, dated December 29th, will be a Naval Number, dealing in various special articles with the use of Naval aircraft. With it will be issued an Art Supplement painted by a well-known artist, showing a seaplane rising from the water. This is one of the finest pieces of artistic work aviation has produced, and the number should be ordered early, as there will be a big demand for it.

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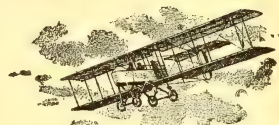
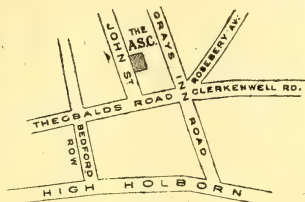
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Naval and Military Aeronautics.

From the "London Gazette," Dec. 14th, 1915.

ADMIRALTY, Dec. 12th.

ROYAL NAVAL AIR SERVICE.—Probly. Flight Sub-Lieuts. for temp. service confirmed to rank of Flight Sub-Lieut. for temp. service: H. E. Crawford, May 17th. F. E. P. Barrington, June 13th. H. V. Reid, June 24th. J. E. Minifie, June 23th. M. J. M. Bryan, August 1st. N. C. Blanch, August 6th. R. R. Soar, August 10th. I. N. C. Clarke, H. V. Worrall, H. L. Francis, F. D. H. Bremner, J. H. D. M. Campbell, August 14th. E. L. Pralle, August 16th. R. J. O. Compston, August 24th. G. R. S. Fleming, Sept. 1st. E. Potter, G. K. Williams, Sept. 3rd. S. A. Black, Sept. 4th. S. M. Kinkead, J. S. Bolas, Sept. 11th. K. V. Hooper, B. R. Lee, Sept. 12th. L. E. Smith, J. Robinson, Sept. 30th. D. Whittier, A. B. Shearer, Oct. 6th. C. J. Moir, Oct. 24th.

WAR OFFICE, Dec. 14th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—Nov. 18th: Capt. C. Mackay, Leinster, S.R., and seconded; Lieut. J. Prestwick, A.S.C., T.F.; Temp. Sec. Lieut. K. R. Binning, Manch., and transd. to Gen. List; Sec. Lieut. R. H. G. Neville, D.C.L.I., and seconded; Sec. Lieut. J. Stuart, R. Innisfig, F., and seconded; Sec. Lieut. J. B. Walsmsley, Unattd. List for I.A.

* * *

From the "London Gazette," Supplement, Dec. 15th, 1915.

WAR OFFICE, Dec. 15th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—Nov. 30th: Temp. Capt. J. D. Waddell, Welsh, T.F.; Lieut. W. A. C. Heyman, 4th Hrs., and seconded; Lieut. G. F. Bone, R.E., T.F.; Lieut. T. Jones, Can. A.S.C.; Sec. Lieut. L. A. Newbold, Essex, and seconded. Dec. 4th: Capt. G. Henderson, 38th K.G.O. Cent. Ind. H., I.A.; Lieut. C. B. Wilson, R. O.; Temp. Sec. Lieut. J. R. Philpott, Suffolk, and transd. to Gen. List; Sec. Lieut. D. Brooks, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieut. (on prob.) B. Mott, Oct. 22nd. Dec. 13th. C. T. H. Vaisey, W. O. Phillips, R. D. Clinch, B. J. Nicholson, I. I. T. Hewer, F. H. Humphreys, H. M. B. Law, A. J. Hamar, A. C. Hatfield, E. B. Macmanus, H. P. Tempest, G. Wigglesworth, A. C. Ferguson, J. C. Griffiths, R. M. W. Browne, G. L. Bond. Sec. Lieut. (on prob.) D. Brooks confirmed in rank.

* * *

From the "London Gazette," Supplement, Dec. 16th, 1915.

WAR OFFICE, Dec. 16th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Sqn. Coms. (and to be temp. Maj. whilst so employed).—Capt. R. Orme, S.R., from an eqmpt. officer. Nov. 29th. Capt. T. O'B. Hubbard, S.R., from a Flight Com. Dec. 7th.

TERRITORIAL FORCE.—HAMPSHIRE AIRCRAFT PARKS, ROYAL FLYING CORPS.—Sec. Lieut. (temp. Capt.) A. R. Martin, E. Kent (Prov. Batt.), to be Capt. (temp.) and to be Adj. Nov. 12th, instead of as previously notified.

[This is apparently a new unit, and one assumes that it is the latest manifestation of the Royal Aircraft Factory.—Ed.]

* * *

From the "London Gazette," Dec. 17th, 1915.

ADMIRALTY, Dec. 16th.

ROYAL NAVAL AIR SERVICE.—Mr. J. M. Scott granted commn. as Engr. Lieut. for temp. service. Dec. 14th. Flight Sub-Lieut. H. H. Square promd. to rank of Flight Lieut. August 17th.

WAR OFFICE, Dec. 17th.

REGULAR FORCES.—SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) F. H. Songhurst confirmed in rank, F. C. Buck to be Sec. Lieut. (on prob.) Dec. 1st

* * *

It was notified in the "London Gazette" on December 17th that the King has awarded the Distinguished Service Cross to Lieutenant Theodore Douglas Hallam, R.N.V.R., now acting Flight-Lieutenant, R.N., in recognition of his services and signal gallantry in charge of machine-guns in the Gallipoli Peninsula.

* * *

From the "London Gazette," Supplement, Dec. 18th, 1915.

WAR OFFICE, Dec. 18th.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Sec. Lieut. J. C. Turner, R.A., and seconded. August 24th.

TERRITORIAL FORCE.—HAMPSHIRE AIRCRAFT PARKS, ROYAL FLYING CORPS.—M. J. P. O'Gorman, C.B., to be Lieut.-Col. (temp.). Dec. 19th.

NAVAL.

The following appointments were notified at the Admiralty on Dec. 14th:—

ROYAL NAVAL AIR SERVICE.—Mr. J. P. A. Waller granted a temp. commission as Lieut., R.N.V.R., with seniority December 13th, and appointed to the "President," additional, for R.N.A.S.

* * *

The following appointments were notified at the Admiralty on December 16th:—

ROYAL NAVAL AIR SERVICE.—Capt. G. M. Paine, C.B., M.V.O., has been granted the rank of Commodore, first-class, to date December 10th.

Temp. Lieut., R.N.V.R., E. V. Sassoon entered as Actg. Flight Lieut., and appointed to the "President," additional, for R.N.A.S., to date December 13th.

Temp. Wt. Officer, second Grade, C. A. Schurr, promoted to the rank of Temp. Lieut. R.N.V.R., and appointed to the "President," additional, to date December 15th.

Mr. M. O. Fuller England granted a temp. commission as Sub-Lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date December 15th.

Messrs. G. E. Spital and M. R. Kingsford entered as probly. Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date December 15th.

* * *

The following appointments were notified at the Admiralty on Dec. 17th:—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut. H. H. Square, promoted to Flight Lieut., with seniority August 17th.

The undermentioned have been granted temp. commissions as Sub-Lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., all to date December 16th; A. W. C. Holcombe, J. L. Kerry, A. Sandell, D. C. Evans, H. J. Roach, F. E. Fraser, S. Hampton, and R. S. Thacker.

The following have been entered as probly. Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: A. I. Hutty, J. D. Scott, H. R. Wambolt, G. E. Duke, C. E. Moore, B. R. Padmore, J. H. Keens, Major Benson Walker, C. B. Sprout, T. R. Liddle, F. C. Armstrong, F. C. Hellmuth, and R. F. Redpath, December 1st; R. H. Collett, December 16th; A. W. C. Kidner and N. H. McDiarmid, November 22nd.

* * *

The following appointments were notified at the Admiralty on Dec. 18th:

Lieut.—(T), G. L. Davidson, D.S.C., to the "President II," additional, for R.N.A.S.

ROYAL NAVAL AIR SERVICE.—Chief Petty Officer H. G. Macfarlane Northcott granted a temp. commission as Lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date Dec. 16th.

* * *

The Secretary of the Admiralty issued the following on December 13th:—

Flight Sub-Lieut. Graham, R.N.A.S., in an aeroplane with Flight Sub-Lieut. Ince, R.N.A.S., as observer, whilst on patrol off the Belgian coast at about 3.15 this afternoon, sighted a large German seaplane and gave chase.

After a severe engagement the German machine was hit and fell. Before reaching the water it burst into flames, and at the moment of striking exploded. No trace of the pilot, passenger, or machine could be found.

Flight Sub-Lieut. Graham's machine was severely damaged by machine-gun fire and fell into the sea, but both officers were picked up and safely landed.

* * *

The Secretary of the Admiralty announced the following casualties on December 19th:—

INJURED.

Under date December 17th—
Flight Sub-Lieut. Herbert G. Brackley, R.N.
Sub-Lieut. Herbert G. P. Rees, R.N.V.R.

[These are apparently the result of a smash on a twin-engined machine near the East Coast.—Ed.]

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The promotion of Capt. Godfrey Paine, C.B., M.V.O., R.N., to the rank of Commodore, first class, will be welcomed by all concerned with aviation as the somewhat tardy reward of prolonged service of very high value to the Flying Services. Commodore Paine was the founder of the Central Flying School, and has been its commandant ever since. It was of a piece with the curiously wrong-headed methods which governed the foundation of Service aviation that a Naval officer of great sea experience should be perched on a hilltop as far from the sea as possible to form and command a school for Service aviators who were almost all soldiers and civilians. And it speaks all the more highly for the ability of the officer in question that he should have succeeded in building up under such conditions an establishment which is undoubtedly the best-run and best-organised thing of its kind in the world. Moreover, Commodore Paine succeeded in winning the personal regard of the great majority of those who served under him at the C.F.S., either as instructors, pupils, N.C.O.s., or mechanics.

Commodore Paine would certainly be the first to ascribe the success of the C.F.S. to his able Chief of Staff, Major Trenchard, D.S.O. (now Brigadier-General, C.B., and extra A.D.C. to the King, and commanding the R.F.C. in the field), so one may merely say that some special providence ordained for the good of the R.F.C. that these two officers should together have the training of the officers who are now commanding wings, squadrons, and flights of the Flying Corps, for hardly any of the pre-war products of the C.F.S. are now below the grade of flight-commander. The C.F.S. has been the real nursery of the R.F.C., and one's sympathy is with the numerous young officers holding temporary commissions who have not had the salutary experience of passing through the C.F.S. to obtain proper knowledge of discipline, of the technical side of their profession, and of personal deportment.

As concerns the R.N.A.S., a comparatively small proportion of its officers passed through the C.F.S., which is to be regretted, but those who had that good fortune never fail to show the effect of their stay there in the manner in which they run their respective jobs.

It has not yet been made public whether Commodore Paine is to remain in command of the C.F.S., or whether he will return entirely to his own Service. In the latter event the Army's loss will be the Navy's gain, for this officer has a way of getting things done, whether it be a matter of men or machines, and in both respects there is much room for improvement in the R.N.A.S. At the C.F.S. things were judged by practical results and actual performances, not by theoretical successes, and the R.N.A.S. may find that salvation by works which it has not found by faith alone.

In his new rank, and in any new sphere of action to which his energies may be turned, the "Owner," as he was called at the C.F.S., will carry with him the good wishes of the hundreds of officers and men who have served under him on the stormy billows of Salisbury Plain.—C. G. G.

* * *

On Wednesday, December 8th, Flight-Commander S. V. Sippe, D.S.O., R.N., was married to Miss Mabel d'Arcy by the Rev. Father Bernard Vaughan.

Flight-Comm. Sippe will be remembered as winning the D.S.O. and the Legion of Honour by raiding the Zeppelin Factory at Friedrichshafen in November of last year. All will wish him and his bride long life and happiness.

* * *

The marriage arranged between Lieut. William Pitcairn Kemp, R.N.V.R., attached R.N.A.S., third son of Mr. and Mrs. David Campbell Kemp, of Cultra, County Down, and Margaret Elizabeth Georgiana, elder daughter of the late Douglas Metcalfe, barrister-at-law, and Mrs.

Douglas Metcalfe, 9, Mortimer Road, Clifton, Bristol, will take place quietly at All Saints' Church, Clifton, on Thursday, the 30th inst., at a quarter past two o'clock.

[Lieut. Kemp is the brother of Mr. Ronald Kemp, the well-known aviator who was so badly injured about two years ago by the Royal Aircraft Factory's "F.E." biplane, and is now testing Short seaplanes.—Ed.]

* * *

A marriage has been arranged, and will take place shortly, between Flight Sub-Lieut. R. F. S. Leslie, R.N., son of the late F. J. Leslie and Mrs. Leslie, Amberley, Glos., and Phyllis Brodie, younger daughter of the late F. P. A. Gordon and Mrs. Gordon, of 38, New Cavendish Street.

* * *

A member of an R.N.A.S. Kite-Balloon Section on active service writes to a friend in London:—

"Many thanks for your letter. I am so sorry I have not written sooner. The fact is I have been expecting to be home on leave, and should really have been home early in November. Now it is on the knees of the gods whether I shall get leave at all. It's a horrible war!

"Of course, during the bad weather the balloon has simply had 'damn-all' to do. On occasional decent flying-days every variety of aircraft gets up. Boches come over. They don't stay long. Raiders go out in batches—and get severely straited, returning one by one. A short time ago I saw a Morane 'parasol' apparently shot down while returning from a raid. The machine made a terrific dive just after returning from the fire zone. Afterwards the story went that the pilot had been hit by shrapnel across the forehead. His eyes filled with blood, so he dived and left the machine to look after herself while he wiped away the gore. When he could see again he found himself close to the ground and not far from home. The dive from one side of the sky to the other was rather fine to watch—I had a telescope on the machine. (By the way, if it was not for an occasional affair of this sort we should forget there was a war.)

"Some of the remarks passed on the balloon and other gear by inquisitive heroes of the Junior Service are rather amusing. The valve in the nose of the balloon is usually either a searchlight or an observation window. Hydrogen tubes are popularly supposed to contain 'poison gas.' One party, after a brisk argument, concluded they were aerial torpedoes, and went away with a hazy notion of how they were taken up and fired from the balloon.

"Their remarks on the subject were very funny, but embellished with too many Anglo-French blasphemies to be repeated. Incidentally, many years after the war travellers in the north of France will marvel greatly at hearing the people—the grown-up children of to-day—using strange oaths in dialects English, Scotch and Irish."

MILITARY.

The following passage in the telegraphic dispatch from General Headquarters in France, dated December 15th, 1915, 9.15 p.m., refers to aircraft:—

Our aeroplanes raided Hervilly Aerodrome successfully. There have been ten combats in the air, in the course of which an enemy battleplane was driven down by one of our reconnaissance machines. One of our machines was forced down within our lines.

* * *

The following passage in the telegraphic dispatch from General Headquarters in France, dated December 16th, 9.10 p.m., refers to aircraft:—

The report in the German wireless of the 15th that we lost four aeroplanes is untrue.

[It may be noted that the German official communiqué of December 15th makes no reference to British aeroplanes, and the places at which four aeroplanes were brought down points to their being French. Equally, the French communiqué of December 16th does not deny the

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loss. The German "wireless" yarns are not, as a rule, published in the British papers, at any rate this one was not, so the denial from G.H.Q. probably refers to a "Wolf wireless" picked up by G.H.Q. wireless station.—Ed.]

* * *

The following passage in the telegraphic dispatch from General Headquarters, dated December 18th, refers to aircraft :—

Yesterday afternoon a French torpedo-boat brought down a German seaplane off Nieuport, taking the occupants prisoners.

* * *

The following notification was issued by the Press Bureau on December 15th :—

The following communication has been received from the Secretary of the War Office :—

The statement made in some newspapers to-day to the effect that the War Office has decided not to take over the naval personnel at present employed in manning the anti-aircraft guns in London is unauthorised and inaccurate.

No such decision has been made. Both Services are working in the closest co-operation to the same end—viz., the defence of the capital—and the large additions to the various measures of defence contemplated render it most improbable that the Army Council would be able to dispense with the services of the Royal Navy Anti-Aircraft Corps, which the Admiralty has offered to place at their disposal.

[As the "naval personnel" consists chiefly of civilians in pseudo-naval suits, and as the Army people who will have to do the actual shooting will naturally need someone to shift shells, and polish metalwork and clean ammunition wagons and generally do the "teeny's" work for the gun stations, it seems quite reasonable to suppose that the volunteer A.A.C. people may continue to serve their country in their own useful way. Probably they will find their energies more efficiently utilised under the new régime, for, despite its affection for red tape, the War Office is efficient, and anyhow red tape is a tidier fabric than cotton waste—which might be regarded as the corresponding emblem of the senior Service.—Ed.]

* * *

The following appeared in the casualty list published on December 17th :—

CORRECTION : MISSING.

Strong, Lieut. C. C., 13th London (T.F.) (Princess Louise's Kensington), att'd. Royal Flying Corps, should read : Strong, Capt. C. C.

* * *

The following casualties in the Expeditionary Force were reported on December 20th under date December 14th :—

WOUNDED.

Beil-Irving, Sec. Lieut. A. D., 3rd Gordon Highlanders, att'd. Royal Flying Corps.

Guest, Capt. the Hon. O. M., Lothians and Border Horse and Royal Flying Corps.

[Capt. Guest is the youngest brother of Lord Wimborne, at present Lord Lieutenant of Ireland.—Ed.]

MISSING.

R.F.C.—Cox, 2373, First Class Air Mechanic W. H. ; Kirkbride, 2036, First Class Air Mechanic H. J.

Previously reported Missing, now reported Killed.

Adams, Capt. T. D., R.F.A., W. Lancashire Brig. (T.F.), att'd. Royal Flying Corps.

* * *

The following appeared in the obituary columns on December 20th :—

ADAMS.—On November 7th, 1915, in France, Capt. T. D. Adams, R.F.A., att'd. Army Flying Corps, younger son of the Rev. W. J. Adams, V.D., Senior Chaplain, 57th (West Lancs.) Division (T.F.), in his 27th year.

Captain T. D. Adams reached his rank in the 3rd Battery of this Territorial brigade in April, 1914.

* * *

The following appeared in the obituary columns on December 16th :—

SMITH.—On Tuesday, December 14th, 1915, killed in an aeroplane accident at Farnborough, Captain Henry Dalby Dryden-Smith, B.Sc. (Lond.), Royal Flying Corps, only son of Henry Smith, M.Inst.C.E., M.I.M.E., 37, Holland Street, Kensington, W., aged 23.

On December 15th Captain Dryden-Smith, of the Durham Light Infantry (attached Royal Flying Corps), was burned to death while flying at Farnborough. He was seen trying to effect a landing on Laffan's Plain with his aeroplane on fire, but the machine fell behind Government



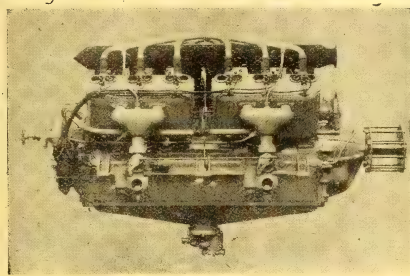
Mr. Thomas Atkins' idea of a flying machine. An A.S.C. unit, behind the lines, making a burlesque aeroplane of a Ford chassis, with a pickaxe for a propeller. It probably flew as well as Mr. Ford's "Dove of Peace" is likely to fly.

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House, blazing so furiously that no assistance could be rendered.

Capt. Dryden-Smith was formerly in the Durham Light Infantry, serving for some time as adjutant. He was promoted captain in December, 1914.

* * *

The Court Circular dated Buckingham Palace, Wednesday, December 15th, says:—"Lieut. R. A. Archer, R.A. and R.F.C. . . . had the honour of being received by his Majesty," when the King decorated him with the Military Cross.

* * *

The following notice appeared on December 15th:—

MORTON—WATKINS.—The engagement is announced between Rowland F. S. Morton, Flight-Lieut., Royal Flying Corps, third son of the late Rev. Clement J. Morton and Mrs. Morton, of Blackheath, and Joan Isabel, third daughter of Mr. Arthur A. Watkins, M.I.C.E., and Mrs. Watkins, of Blackheath. [Flight-Lieutenant is a Naval rank. Perhaps someone will indicate the fact to those who inserted the notice.—Ed.]

* * *

The following appeared in the marriage columns on December 17th:—

KELLY—ADAMS.—On December 14th, at St. Cyr Church, Stinchcombe, Gloucestershire, Captain John Upton Kelly, Royal Flying Corps, to Eileen Miriam Adams.

* * *

A Maurice Farman from Farnborough crossing London got into difficulties and had to descend in the grounds of Dulwich College, where it remained for three days. On the morning of December 19th the machine started with some difficulty to go back under its own power to Farnborough. It had only proceeded a few hundred yards when the engine failed and the aeroplane fell onto a large signal girder across the main line of the South Eastern and Chatham Railway at Alley Park.

The girder and the machine were both wrecked and the pilot was very seriously injured. He received temporary surgical aid at the lodge of an adjoining mansion, and was afterwards conveyed to hospital. The observer escaped without injury.

[Without absolute knowledge one cannot say for certain who or what was to blame, but taking the above report as being correct as far as it goes, it seems a peculiarly unwise thing to try to take a machine with an engine which was known to be defective out of a limited ground like that at Dulwich over a district which is like the bottom of a basin with hills round it, and one mass of houses. And unless the machine and engine were both known to be in perfect tune it was doubly unwise to try to carry a passenger.

The way machines are being smashed up day after day without much inquiry is leading to serious waste of money. A pilot should be as careful with his machine as a sailor with his ship, and there should be a proper court of inquiry whenever one is lost.

In this instance it is as well that the young gentleman did not fall on the electrified section of the line and get himself electrocuted.—Ed.]

* * *

Mr. Warner Allen, writing from G.H.Q., says:—

"The first line of barbed wire and the enemy's parapets behind can usually be seen from the opposing trenches by means of the periscope, without excessive risk. Behind, the ground has been carefully reconnoitred by the aeroplanes and captive balloons, and most detailed maps have been made of the enemy's system of trenches. Nothing is more amazing to the untrained eye than the elaborate way in which aeroplane photographs are fitted together, like pieces of a jig-saw puzzle, until they form

a whole from which not a single deviation of the trenches and not a single little mark that marks a machine-gun or mine-thruster shelter has been omitted."

* * *

The appointment of Mr. Mervyn J. P. O'Gorman, C.B., to be temp. Lieut.-Col. (T.), and to command the Hampshire Aircraft Parks, R.F.C., will be noted in the "Gazette" of December 18th, and will give pleasure to many.

This paper has always contended that the Royal Aircraft Factory should be under the command of a soldier, and though Mr. O'Gorman is not, and is never likely to be, a regular soldier, his temporary Territorial rank should give him better control over the heterogeneous mass of employees at the R.A.F. (or the RIF-RAF, as a local humorist calls them) than he has been able to enforce hitherto. In the event of any little labour trouble the matter is so much more easily settled if the men are in any kind of amorphous corps and subject to military discipline, for in war time they can simply be mobilised and sent back to work in uniform at a shilling a day—which is a very simple method of settling a strike. The "right to strike" vanishes and becomes mutiny contrary to military law in such an event. One hopes that in the event of any labour trouble Mr. O'Gorman will not hesitate to use his temporary military rank to its fullest extent.

Students of the "Gazette" may note one curious feature about those appointments to the H.A.P. When Lieut.-Col. Seely, as Minister for War, was announcing the establishment of the R.F.C., he said that the Corps was to be "the *corps d'élite* of the British Army," and consequently it has always been given precedence in the "Gazette" over all other corps; but apparently by some mishap the H.A.P. appears at the very end of the Territorial units, sandwiched between the Army Veterinary Corps and the Unattached List. As the first Territorial Section, R.F.C., would it not be more seemly for the new unit to occupy the premier position in the Territorial list as its progenitor does among the Regular Forces?

FRANCE.

The communiqué of December 14th says:—

This morning one of our air flotillas, composed of eleven aircraft, dropped a number of bombs of 155 and 90 millimètres on the railway station and lines at Mühlheim.

Another flotilla of twenty-two French aircraft dropped bombs with equal success on the enemy's installation at Hauriaucourt.

Lastly, a third party of twelve aircraft effectively bombed German works south of Hampton, in the region of Château Salins, and at the Château of Burtheourt. Our escorting aircraft attacked and routed a flotilla of five enemy aircraft.

* * *

The communiqué of December 15th says:—

Besides the aerial bombardments reported yesterday, our aeroplanes in the course of the 14th made numerous flights in pursuit of enemy craft.

One of our machines attacked an enemy aeroplane over Schlestadt, Alsace. The enemy aeroplane took to flight.

Two others in Artois engaged three Albatros aeroplanes in the enemy's lines. One of the Albatroses had to come down.

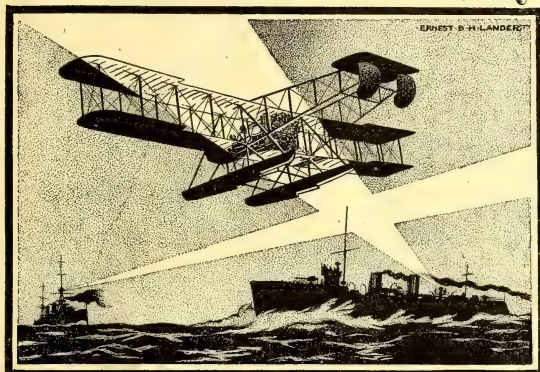
Finally, one of our flotillas, in co-operation with British aeroplanes, bombarded the aviation ground of the Germans at Hervilly (Somme).

A later communiqué of the same date says:—

Our aviators have continued to display activity. A group of 13 French aviators bombarded the German aviation camp at Hircheim, east of Mulhouse. Shells

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of 155, 90, and 120 millimètres, which were aimed at the hangars, struck their objective. Of the fifteen enemy aircraft which were on the ground at the moment of the bombardment five only went up and attempted, without any result, to drive off our air flotilla.

The communiqué of December 17th says:—

Two of our bombardment aircraft dropped some twenty shells of heavy calibre on the Sablons Station at Metz on the night of the 16th.

A communiqué issued by the Ministry of Marine on December 18th says:—

A French torpedo-boat pursued and shelled two enemy seaplanes which were resting near the Outratel Bank. One of the seaplanes succeeded in flying away, but the other was hit and brought down, its occupants, a naval officer and a non-commissioned naval officer, being captured.

The morning communiqué of December 19th says:—

A squadron of four aeroplanes carried out on the night of the 17th-18th inst. fresh bombardment operations over the station of Metz-Sablons. Some forty bombs were dropped over the station and the adjoining buildings.

The evening communiqué of December 19th says:—

Enemy aeroplanes this morning flew over the region of Poperinghe and threw ten bombs. A woman was killed and another woman and two children were wounded.

A report from Paris on December 16th says that the news that a German airship had crossed the French lines at Jonchery (near Reims, 65 miles from Paris) reached the Military Governor of Paris about 8.15 p.m. on Monday. Orders were at once sent to the aviation centres, and in less than five minutes a large force was in the air ready to attack the airship.

The German commander, finding himself within range of searchlights and fired upon from various directions, turned back after flying a distance of about sixteen miles.

[The searchlights in question would be the ordinary field searchlights, as 16 miles from the front would not bring him within range of the regular Paris defences.—Ed.]

GERMANY.

The communiqué of December 15th says:—

A British steamer, which ran aground on the 12th inst. off La Panne, was on Tuesday (14th) attacked with obvious success by German airmen.

The enemy, who sent out several air squadrons against Bapaume, Peronne, and Mülheim, in Baden, lost in aerial fighting and by the fire of anti-aircraft guns four aeroplanes, including a large one with two motors.

The communiqué of December 16th says:—

Lieut. Immelmann yesterday caused his seventh enemy aeroplane (an English monoplane) to fall over Valenciennes, after an aerial battle.

The aim of the aeroplane attack on Mülheim (Baden) was, according to the French representation, the railway establishments of that town. None of the bombs fell, however, in the neighbourhood of these buildings, but one civilian was killed and another injured in the town itself. The purely military damage is limited to the destruction of one window frame in the hospital.

Army Group of von Linsingen: A Russian aeroplane was forced to descend to the east of Luck within reach of the Austro-Hungarian troops.

The communiqué of December 18th says:—

Western Theatre of War.—No important events have occurred. A hostile air attack was carried out on Metz, resulting in severe damage to the Municipal Museum, but no other damage.

The Danish paper "Ribe Stiftstidende," which is usually very reliable, learns that a new Zeppelin, "No. Z28," stationed at Fuhlshüttel, near Hamburg, exploded on or about November 17th, while another Zeppelin, the name and number of which are unknown, was destroyed about the end of November at Bitterfeld, in Prussian Saxony.

A message from Copenhagen, dated December 15th, states that the "Kolding Avis," of Husum, Western Schleswig, reports that the airship L 22 was destroyed a fortnight or so ago by the accidental explosion of a bomb as the airship was leaving her shed. It says, "the crew, numbering about forty, were nearly all killed or wounded, and the huge shed was partly demolished. The L 22 had only been a few weeks in use. She was described as a sister ship of the Z 18, which recently exploded at Tondern, and as being of the super-Zeppelin type, with all the latest improvements, including platforms on the top of the envelope for the machine and anti-aircraft guns in invisible gondolas and detachable rafts for floating purposes, in case of accidents in crossing the sea."

[That is Reuter's translation. Probably it means that a total of forty from among the crew and the landing party together were killed and injured. "Platforms on the top in invisible gondolas" is true Reutereese. A gondola, or "gondel" to use the German word, is so called because it is a boat-shaped thing designed to float on the water. Just what constitutes a "super-Zeppelin" is not clear. By the way, the Danish correspondent of THE AEROPLANE states that the "Ribe Stiftstidende" is a highly respectable and well-informed paper. One assumes therefore that one must not translate the title as "The Ribald Stiffs' Tidings," and that it is not the official organ of the junior ranks of the Danish naval air service.—Ed.]

ITALY.

The communiqué of December 15th says:—

A squadron of our aviators carried out yesterday an incursion over the Chiapovano and Idria Valleys, dropping bombs and darts on the enemy's encampments and huts at Chiapovano and Slaa.

Our intrepid pilots subsequently, flying low, over the intense fire of the enemy's anti-aircraft batteries, turned their quick-firing guns onto the enemy's encampments, creating the utmost imaginable panic among the troops there assembled.

RUSSIA.

The communiqué of December 15th says:—

Near Uxkul an enemy aeroplane dropped bombs.

A Central News correspondent in Russia says:—"A big aeroplane station has been organised in Liban, and work is proceeding energetically on the construction of an enormous hangar, where Zeppelin parts, brought from Germany, will be put together. Some of the Liban factories have been working for the Germans in the preparation of war material for months, with Von Wolfstrau, an engineer, at the head. The general situation of the people is painful to a degree, and they wait with anxiety for their liberation.

NOTICE

To Aeroplane Manufacturers

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BELGIUM.

A message from Amsterdam, dated December 17th, says that travellers from Brussels arriving at Roosendaal state that a Zeppelin exploded on Wednesday near Namur. The whole of the crew were killed. The explosion is said to be due to a motor defect.

[More travellers' tales, probably.—Ed.]

HOLLAND.

According to the "Echo Belge," of Amsterdam, on December 18th, two German deserters arrived at Aardenburg in an aeroplane. They were a lieutenant and a private. The aeroplane passed over the frontier at a height of 10 metres. Both men were sent to Flushing later to be interned.

[It sounds like a Belgian story.—Ed.]

MONTENEGRO.

The communiqué of December 18th says:—

On December 16th an Austrian aeroplane threw two bombs on Cettinge without doing any damage, and six bombs on Berana, where two civilians were killed and two others seriously wounded.

TURKEY.

The communiqué of December 14th says:—

Dardanelles Front.—Enemy armoured cruisers, assisted by an observation balloon, bombarded our position near Anafarta. Our artillery replied, and successfully bombarded the enemy's trenches and batteries.

* * *

The communiqué of December 17th says:—

Our artillery yesterday shot down an enemy aeroplane.

SWITZERLAND.

The Federal Government has created a Department of Aeronautical Construction attached to the National Laboratory at Thun.

Evidently dependence on foreign countries for aeroplanes has been found undesirable, and possibly an Air-fleet will take the place of the "Navy" of Switzerland. Swiss flying-men have certainly a great name, and might very usefully protect that country's frontiers from Teutonic violation. At present most of them are otherwise occupied.—T. S. H.

THE HIGH COMMANDS.

Recent changes in the High Commands are not without interest to the Flying Services. Field-Marshal Sir John French has displayed sufficient interest in military aviation to preside at a meeting of the Aeronautical Society when aircraft were being discussed, and General Sir Horace Smith-Dorrien has done likewise. Those who were present at both meetings will recall that both these distinguished officers clearly indicated their belief in aircraft for military purposes, though Sir Horace Smith-Dorrien not only displayed a closer knowledge of the subject—due, doubtless, to his command at the time including Salisbury Plain—but also appeared to have the clearer intellectual comprehension of aeronautical possibilities.

Why Sir John French has resigned his command in France is not likely to be made known to the public. One does not recall any precedent for a successful commander-in-chief resigning in the middle, or before the middle, of a war in which his operations were progressing towards certain victory. Possibly the rôle of the British Nation in this war is to establish precedents. Certainly our recent political history—especially the unpublished history—is without precedent.

In Sir Douglas Haig the British Expeditionary Force in France has a commander who has already distinguished himself by his organising ability in time of peace and by his ability as a director of operations in war. As an intellectual soldier he must, of course, realise the import-

ance of aircraft in the scheme of things, and one hopes that he will take a directly personal interest in the possibilities of aerial warfare. There has been in the past an inclination to overrate the efficacy of bomb-dropping, and to expend time and material—and occasionally pilots—in trying to do with many aeroplanes and many bombs just what could be done at least as well, and perhaps better, by one long-range gun, a good artillery spotter, a wireless set, and a single aeroplane. Possibly the personal interest of a new and energetic C-in-C., approaching the problem without prejudice, may find new or better uses for aircraft.

Sir Horace Smith-Dorrien will find in East Africa still more new uses for aircraft, and it is to be hoped that the squadrons of the R.F.C. which are to accompany his force are properly equipped for their work. Fast machines, and machines like B.E.2.c.s. which are difficult to land, will be absolutely useless in the short scrub of the East African uplands. The ability to "pancake" is worth all other qualities except the ability to climb, which is most important of all—this on the authority of men who know the country as you and I know Piccadilly.

All will wish General Smith-Dorrien a brief and glorious campaign and an early return to fields where his military genius and his magnetic personality—which has shown itself in his ability to command the devotion of all those under him—may find their true outlet. Those who know and admire him have feared that his was to be a fate almost as unfortunate as that of the late Sir William Gatacre—whose martyrdom has been so convincingly told by his widow in a biography which surpasses in interest and pathos any work of fiction. General Smith-Dorrien saved the British Army at and after Mons, and in doing so saved Paris, and probably France—though he has not yet had full credit for his work. Some day the true story of that retreat may be told. There are those who believe that he will yet be allowed to do himself justice in the European portion of this present war. In the meantime, he has a task in Africa which, if not wholly worthy of his high ability, is at any rate sufficiently difficult to make it worth while to employ one of our best officers in making success a certainty.—C. G. G.

THE R.F.C. AIDS COMMITTEE.

The Royal Flying Corps is now many times as large as it was in August, 1914, and its size is being constantly increased. Its work never ceases. In good weather there is more flying, in bad weather more danger. In Flanders, in Egypt, in Mesopotamia, or wherever they serve, the members of the corps have earned the highest praise. Another winter is with us, and an eloquent appeal from Lady Henderson, wife of Major-General Sir David Henderson, K.C.B., D.S.O., Director of Military Aeronautics, reminds us that, whereas the different regiments at the front receive comforts from the counties to which they belong, the Royal Flying Corps belong to no special part of the country.

Belonging as they do to the nation in general, they come within the scope of none of these county funds. Therefore, the Royal Flying Corps Aid Committee, of Surrey House, Marble Arch, London, needs £10,000 to ensure that the regular despatch of monthly parcels, initiated in October, 1914, shall be continued without interruption, one to each member of the corps on active service, as well as a fortnightly parcel, value 5s., and supplies of warm underclothing to the prisoners of war from the corps.

This is an appeal which should meet with a hearty response, particularly as every report made by our commanders in the field contains further evidence of the splendid work being done by the corps. Contributions should be sent to the President and Honorary Secretary of the Fund, Lady Henderson, at Surrey House, Marble Arch, W.

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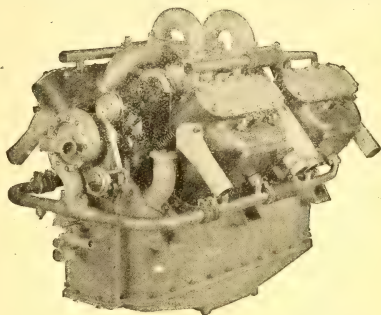
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"TALES OF THE FLYING SERVICES."

Readers of THE AEROPLANE may have seen on the book-stalls a little book entitled "Tales of the Flying Services," issued by George Newnes, Ltd., at the modest price of a shilling. It bears on its cover a well-drawn picture by Mr. Geoffrey Watson, of a "gun 'bus" doing a vertiginous dive after being set on fire by German shell-fire. Also, it bears the name of the editor of this paper. For that reason it is impossible to review it in these columns. Modesty would forbid a eulogistic review and other considerations would prevent an adverse one.

It must therefore suffice to say that it consists of sundry yarns of the R.N.A.S. and R.F.C. which have appeared in this paper from time to time, and of various others which have not. Some are, the author hopes, humorous, and some are otherwise. The book is a humble attempt to convey to the British public a fairly accurate idea of the work of the Flying Services, and the spirit in which that work is done, without indulging in heroics and without advertising public idols. Such names as are mentioned are given only in extracts from official dispatches, but officers and men of the Services, and their friends, will probably be able to identify various other people whose adventures are related.

Some people have been kind enough to express their appreciation of stories of the Flying Services which have appeared in this paper. To such one may quote "Punch's" famous critique, "For those who like that kind of thing this is exactly the kind of thing they will like." If the Services do not like the way in which their tales are told, the author hereby tenders his apologies.

And, if anyone who wants it finds any difficulty in obtaining the book from his local bookseller, it can be had post free for one shilling, and twopence for postage, from Dawson & Sons, Ltd., 2, Breams Buildings, E.C.

BENOIST FLYING BOATS.

Mr. Frank Morriss, of 54 and 55, Piccadilly, has been appointed agent for the "Benoist" flying boats. The Benoist machines are, of course, well known for the excellent flying they have done on the American Continent, particularly in the hands of private sportsmen.

Last week one of the latest Benoist boats, fitted with twin Roberts' engines of 100 h.p. each, was illustrated in THE AEROPLANE flying with four passengers. It is gathered that this machine performs particularly well.

Mr. Morriss is, of course, also agent for the successful and extremely popular Scripps-Booth car, and his business acumen will doubtless do much to popularise the Benoist flying boat in this country.

WORKERS AT PLAY.

Both the staff and the employees of the Whitehead Aircraft Co., Ltd. seem to realise that a little hearty relaxation goes a long way towards retuning tired brains and muscles, and consequently social functions are a regular feature of the firm's existence.

On Saturday, December 11th, the employees had a fancy-dress football match at Old Deer Park, Richmond. The teams, designated "Rudders" and "Wings," consisted of a very mixed society.

The characters in the teams were as follows:—Wings: Boyle (Miscellaneous), Clarke (Cowboy), Croft (Scottchman), Snellock (Jester), Harradine ("Some" American), Cory (Baby), Chandler (Queer Man), Corkling (Clown), Price (Pierrot), and Bryant (Funny Man). Rudders: Lowe (Mrs. May), Rowland (Jockey), Howes (Good-night), Callow (Japanese), Staggs (Kodak Girl), Brown (Man in White), Havis (Young Scot), Carr (Farmer's Boy), Young (Charlie Chaplin), Wright (Redskin), and Harris (Flapper).

After a spirited game "Wings" won by a goal, and considering the unpleasant weather the whole afternoon was a success, and a useful collection was made from the spectators in aid of the local hospital.

TECHNICAL TERMS ILLUSTRATED.



A Nose Dive.—(With apologies to "Veritas.")

THE ROYAL AERO CLUB: CHRISTMAS CLOSING.

Members are requested to note that the Club will be closed from 7 p.m. on Friday, December 24th, till 9 a.m. on Monday, December 27th.

FOR PRISONERS OF WAR.

The following contributions are hereby acknowledged by Muriel Countess of Helmsley and Mrs. Rowton to their fund for prisoners of war in Germany:—

From the employees of Vickers, Ltd., Weybridge Works, £5 4s.; from the employees of Vickers, Ltd., Bexley Heath Works, £3 6s. 6d.

THE BABES IN THE MUD.

(THE AEROPLANE correspondent has been to Hendon again after apparently rehearsing for a pantomime.—Ed.)

Draw near, good friends, pray do not look so solemn, But watch me try to fill my weekly column.

This is the season of the Pantomime And so I'll do my Hendon Notes in rhyme. (If you would like to help me, Fairy Queen, I hereby wish my fountain pen were clean.) I hope my Drury-Lanish style will do— But if it fails we'll call it a *revue*.

Well, to begin, on Saturday the weather Was dry, but cold, and wintry altogether. The wind was whistling round the aerodrome. I thought it over—and remained at home.

What flights were made I cannot say for certain, So over Saturday we'll draw the curtain.

On Sunday it was bright, and not so windy, And as I feared an Editorial shindy I donned some boots I knew I could depend on And made my way by motor-'bus to Hendon. When once I passed inside the haunted gate I found, to start with, I was rather late.

Wild spirits floated through the misty air, And there were quite a hundred mortals there. Among them could be seen Marcel Desoutter Watching his brother test the latest "scooter"— A Caudron with twin-engines, going strong. Gee whiz! How "G. 4" fairly scorched along!

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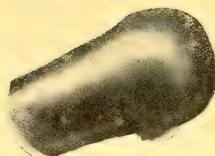
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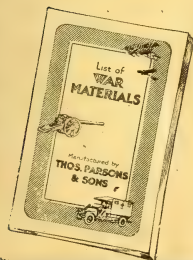
Keep your Powder dry.

The phrase is Cromwellian and, taken literally, rather out of date. This phrase could well be substituted by another, such as “Buy your Paint ready for use.” Paint plays a part of immense importance in modern warfare—to protect, to dissemble, to sanify.

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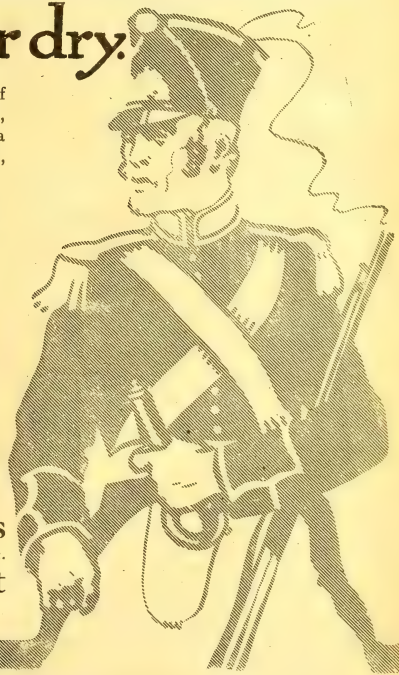


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KINDLY MENTION “THE AEROPLANE”

WHEN CORRESPONDING WITH ADVERTISERS.

The pride of Ramsay—terror of the Bosches.
 (The passenger had dew on his moustaches.)
 The schools got very busy after four,
 One heard the engines—and instructors—roar,
 While over-head, attracting some attention,
 Were Service pilots, whom I must not mention.
 The pupils in the air had all the luck,
 For other people stood, and stared—and stuck.
 Some wicked demon king had brought forth mud,
 Which one would think had been there since the Flood.
 By every car that passed I got bespattered,
 I felt so black that really nothing mattered.
 My Sunday trousers were a perfect wreck,
 I even got a sample in the neck.
 At five the schools reluctantly retire,
 And drag their 'buses homeward through the mire.
 The double-barrelled Caudron goes to bed
 (They had a job to get it in the shed).
 A ghostly moon creeps upward in the sky
 (The sun has had enough, and so have I),
 So—home by tram—I had to ride on top,
 Which, if I may be slangy, was no cop.
 I don't like trams. They're slow, and make me bored,
 And yet I fear I can't afford a Ford.
 My Aunt declares I can, but I can't credit her
 (What's all this got to do with Hendon? Editor).

My task is done. I hope you liked the plot—
 "Babes in the Mud," the title you forgot.
 My Hendon Notes are horrible in rhyme,
 But still—I make them different every time.

D. W. T.

SCHOOL REPORTS. HENDON.

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 Machines in use: Grahame-White biplanes.

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Instructors during week: Messrs. Pashley, Russell, and Win-
 ter.

Straights with Inst.: Messrs. Grasset, Hallet, Hathaway, Hen-
 shaw, Matthews, McLaurie, Smith and Vergult.
 Circuits and eights: Messrs. Gammon and Lewis.
 Eights alone: Messrs. Hughes and Yates.
 Owing to bad weather, further practice impossible.

AT THE LONDON AND PROVINCIAL SCHOOL.

Instructors for the week: Messrs. W. T. Warren, M. G. Smiles,
 C. M. Jacques, H. Sykes, and W. T. Warren, jun.

Rolling alone: Messrs. Loomes, Egelfstaff, Snow and Rimer,
 rolling; straights, Messrs. Thorpe, Lambert, Heyn, Medaets and
 Van Roggen.

Pupils doing figures of eight or circuits alone: Messrs. Martin
 and Burgess; the latter has taken part of the tests for his certi-
 ficate.

Certificates were taken by Lieut. E. D. Atkinson on the 12th,
 and Mr. N. E. Woods on the 14th.

Machines in use: Four L. and P. tractor biplanes.

AT THE HALL SCHOOL.

Instructors at work during week: H. F. Stevens, C. M. Hill,
 C. Anstey Chave, and J. Drew.

Pupils with Inst. J. Drew: Messrs. Arnsby, Ormord, Ridley,
 Milborne, Wooley, Smith, Roberts, Chapman, Collins, Cosgrave,
 Le Coq Moir, Lieuf, Cook, Thom, Cumberbirch, Ackroyd.

With Inst. E. M. Hill: Capt. Grey, and Messrs. Redford, But-
 terworth, Shum, Dresser, Cook, Stirling, Mann, Evans, Nicolle,
 Dodds, Evans, Sepulchre, Gunnett.

Certificate was taken during the week by Mr. R. S. Rattray.

Machines in use: Hall tractor biplanes.

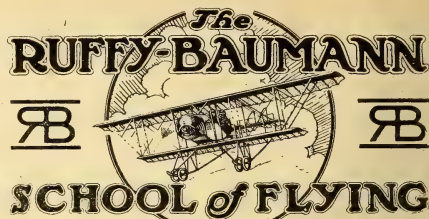
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Straights or rolling alone: Messrs. Tomson, Cole and Griffith.
 Eights or circuits alone: Messrs. Tomson and Cole.

Certificates taken: Messrs. Martin Tomson and Stuart Cole
 passed in very good style, both accomplishing volplanes in a digni-
 fied manner, the latter from a thousand feet.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

TOUT CE QU'IL Y A.

This, to begin with, is a story of prodigal sons, three of one house. Now, as a one-time brother—rather long ago, worse luck—of the ancient and joyous fellowship of prodigal sons, I always advise the intending neophyte of the Real Thing to choose Paris for his apprenticeship to the outdoor branch of the bacon industry. Nowhere else in the world can you be so flat broke, yet so happy, and have such a top-hole time all the same. On the other hand, nowhere else can a little or much money, shared in common, get so much sheer fun and gratification for its transitory owner.

Nowhere else do they know so many pleasant and toothsome ways of cooking the absolute husk, so as to be wholly unlike the awful product of Battle Creek, Mich. Yet *à dix sous, vin—somehow—compris*. And having so dined, nowhere else may you be sure that the other son, three tables off—who-like yourself, is waiting to be discovered—will presently open up all heaven for you with some fiddle conjured up out of nowhere, or sing with the voice of a morning angel.

Your elbow-mate will tell you of your opposite neighbour, to-morrow-year's Rodin. Or of Ivan's or Pavel's wondrous tricks with a brush. Or of the truly marvellous motor that Jules has just built in his tiny fourth-floor workshop in the Little-Blind-Street-of-the-Lost-Sheep. And you, striving and starving as you are, to do some one or other thing of the same sort against all inhuman odds, suddenly become uplifted above these, to your proper company among the nearly-gods.

Then Lolotte of the Conservatoire, from somewhere else in the smoke, just because she has taken a sudden liking to your evident self, will come and sit on your knee, without a word, like a five-year-old. Only, five years hence, if certain small bands inside her white throat don't harden, she will be Carmen, at the top of the street across the bridges, and beyond you. Or she won't if they do, just as happens.

The live fact, then, she is here now. While you are twenty. This is to-night; and who has seen to-morrow? Truly, by the gods' gift, there are nice girls everywhere; but somehow, in Paris. . . . Where, whether you are broke or not, they are pals, if you are the right You. And, incidentally, mostly born housekeepers.

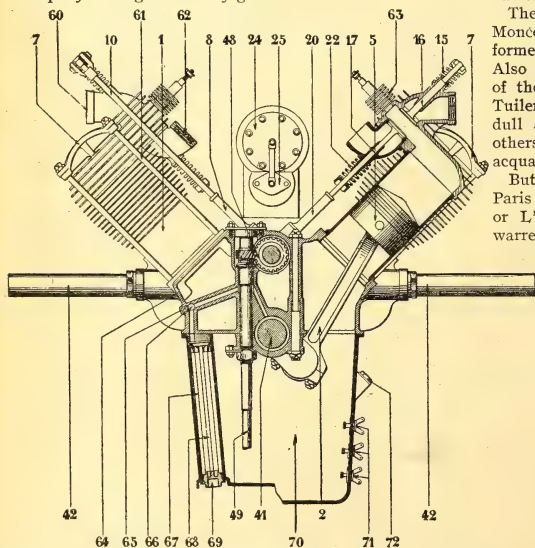
. . . You're English, forty-and-some? But at five in the morning, when the train runs roaring into the final big iron pipe, and you snuff the blessed charcoal in the sunny air, *don't* you feel you're coming Home?

DE PARIS.

For there were so many kinds of Paris—whatever there may be these days. There is the one of Longchamps, where we go racing; the Bois, where we ride o' mornings; and Bagatelle, where we play at playing polo and wear our gladdest rags, and meet so many charming exiles from both Americas and nearly all elsewhere. There is the much more formal Paris of that Faubourg where our most formidable and venerated aunt lives behind her quarters. There is the Paris of the Quartier Brèda, where—there are others, who have made their own noble names by unremitting toil.

There is the Paris of the Rue Cernuschi, and the Parc Monce, where chiefly wealth abides. There is, as the former cause to the latter effect, the Paris of the Bourse. Also newspaper Paris. And the no less obvious Paris of the Grandes Boulevards. Likewise the Paris of the Tuileries and of the Quartier Latin. Again, its rather dull antithesis, of Montmartre. And about a hundred others, with most of which the prodigal will dutifully acquaint himself in time.

But the strangest and sternest, industrial-school-marm Paris is the one you discover after getting in at Marbeuf or L'Etoile, changing three or four times in different warrens, doubling the number you first thought of, and



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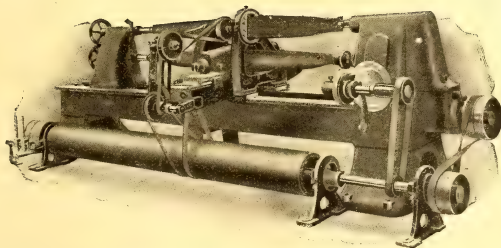
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finally arriving, amazed but unafraid, at Belleville or Boulogne-sur-Seine, which is a kind of naked and widely inhospitable Clerkenwell to the comparative Mayfair you left. Only a thousand times different, and a thousand miles more remote, though you could really walk back across town lots. And ten thousand times more earnestly laborious than Clerkenwell ever began to be. Here, also, are many prodigal sons.

For let me tell you, it is frequently—always ought to be—the aim of the prodigal son to be able to say triumphantly some day, "Come along, dad, and I'll show you a real place where we can get something better to eat than this damned veal."

He succeeds too, actually, often as not. Belleville, at any rate, will teach him how, or kill him.

THREE OF A KIND.

This is really the story, then, *apropos* of this kind of Paris, of three such lads, in the days when motors were just a possibility, the motor-car a doubtful dream, and the aeroplane a sheer lunacy. All three were the sons of a very wealthy man who had made his money in the not over-hilarious trade of making the sort of canvassy lingerie that clothes frozen mutton. Consequently they naturally preferred to go into any old wilderness of discovery rather than into any such business.

One of them had discovered the great fact that if a kettle could only refill itself with cold water it would never boil over. Also the further fact that steam is only too anxious to condense into cold water, the weight of which is increased thereby. And that this weight, given an outlet, will be quite enough to keep the fluid moving. *Ergo*, that a simple reconnection to the bottom of the kettle would probably suffice for a perpetual circulation of the water under a given applied heat, so that the kettle could never actually boil. On the strength of these conclusions and their plain application, he proposed to make a motor, simpler than any other of its time, because it could keep itself reasonably cool without the help of any pump.

So far well. But not yet by any means enough to make money by. However, I am told that these boys possessed the sort of mother—mostly found all over the world—who steals most of the housekeeping money and sends it by secret post to prodigal sons; and so they kept going.

Not that the motor ever proved such a success that it put all other types out of use. Indeed, one of these brothers was killed trying to race it as fast as a dozen others, one day. You will see his memorial—his country's gift—just where Paris becomes Neuilly. Still, this motor never stopped or stalled; so since that time—and the little third-floor workshop—its manufacture and its workmen have come to occupy nearly half a suburb of Paris all to themselves.

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Those concerned, for only one of the three now survives, and has as little to do with the business as any other millionaire—have naturally learned as much as need be known about the making of any sort of motor. You will thus perceive the extreme, the supreme national importance and value of a sufficient breed of prodigal sons.

AND MASTER-RESULT.

The outcome in this case, at any rate, is the 70-h.p. Renault, with its eight cylinders set *en V* at 90 degrees, cooled by air, not water; but, nevertheless, chiefly by means of the same kind of forced draught that so notably assisted the water-cooling of its predecessors.

Its compression, too, in those comparatively small cylinders, is naturally many degrees tighter for the sake of that full 70 h.p. than in the old days when its very slackness made the reputation of the Renault as the easiest motor to start to rag-time, in existence. Yet in every other respect its design retains nothing of old-time practice except—the secret of making it just so.

So much so, that since the war one of its two British editions—apparently as well made or better, and of unexceptionable material—has only just succeeded in reaching that 70 h.p. The other, curiously enough, has so far bettered practice, instruction and experiment that it actually gives a full 80 h.p., which would seem to be the limit of gear-relating, jet-refining, and magneto-conjuring in these dimensions.

You may guess which one it is. Until you try both, and then you will know for certain. But I am sure—speaking from my point of view as scribe and yours as victim—that neither will or can produce a better system of explanatory diagrams than the original Renault catalogue—of the 70 h.p.; which, to make comprehension secure against my probable obscurities, I adopt herewith, for the newer and larger sizes operate on the same principle.

THE LEADING POINT.

The most obviously distinctive feature of the 70-h.p. Renault is that the propeller shaft is formed in one with—indeed, as a merely coned extension of—a huge cam-shaft, mounted at this end with major and minor ball-bearings, set on either side of the half-speed gear, and lying along the mid line of the top of the crank-chamber between the cylinder batteries. Naturally, the propeller is spun at half the crankshaft speed—that is, at a normal rate of 900 r.p.m. as to 1,800 r.p.m.

As I have said in other cases of the same practice, the all-round working results are probably far better than when the propeller, either by the attachment of its shaft to a front-plate, or as an extension of the crankshaft, is compelled to run at the 1,200 or 1,300 r.p.m. speed at which the efficiency of a modern light motor may be expected to begin.

TOUCHING AEROMOTOR EFFICIENCY.

Much more than begin it cannot, since the essence of efficiency in such motors is high speed, and its limit is hardly reached within twice or three times that r.p.m. as track- and road-racing records have long since fully proved. Clearly, then, the higher the motor speed, the more power we may hope to get out of a comparatively small sized, light-weight motor; other things, such as adequate strength, being here assumed.

Up to this point then, we get the ideal condition for aeroplane work: and as a more or less secondary result, a notable flexibility range which might well be usefully converted into a most usefully long corresponding range of flying speeds in the aeroplane itself. A ruinous pity, then, to throw away these advantages, actual and possible.

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And so far as any particular increase of petrol and lubricant is concerned—which might reflect unfavourably upon the aeroplane's "useful-load" carrying and distance abilities—it does not seem to have been shown in practice, either on the track or aloft; at least not to such an extent as to call for a restriction of motor speed. Indeed, in some cases, quite on the contrary.

(To be continued.)

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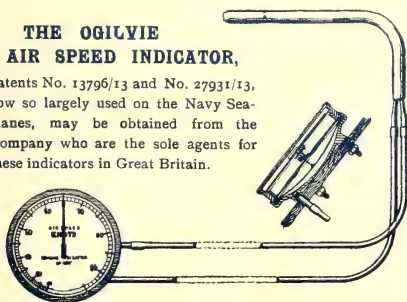
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C. C. GREG

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ON 1915.

They say that eels get used to being skinned. It may be that taxpayers are of a similarly accommodating nature, though it remains to be seen next year and in following years just how much skinning the British taxpayer will stand without turning and biting those who are responsible for tampering with his epidermis. Also, the cause for which the skinning is done has much to say to the temper with which the operation is borne, and the subsequent handling of one's hide also influences one's feelings. If it is treated with due economy and put to the best possible use one may imagine oneself as a kind of St. Martin parting with his mantle. But if one recognises one's precious pelt afterwards as a cabinet minister's doormat, one is apt to become peevish. Which thing is an allegory, and I hope someone will understand it. But that, as I have said, is a matter for 1916, 1917 *et seq.*

What I set out to say is, that this country seems to have accustomed itself astonishingly easily to being stripped of its formerly cherished possessions, such as a good deal of personal liberty—in the matter of lights, and liquor, and freedom of movement without reporting one's whereabouts. Which may indicate patriotism, or may be merely the sheeplike quality of the English. Also, it has accustomed itself to being stripped of the flower of its manhood, which is a thoroughly bad thing.

1915 is really remarkable for the fact that out of a population of some 50,000,000 people, of whom presumably at least 10,000,000 are threatened with intelligence and have some responsibility as voters or householders, a matter of between 3,000,000 and 4,000,000 of the very pick of their young and middle-aged men have been put under arms. Those who remain of the best class are either physically unfit or under or over age. The rest of the population who are of fighting age are deliberate shirkers—except for a few—to be numbered by hundreds—who are so genuinely valuable as to be unsparable to their own industries. For, be it remembered, any workshop, even among those turning out the most essential armament stores, can point to a list of men serving with the colours. Those are generally its best men, and they are never by any chance its worst. The worst take precious good care to stop at home.

SALVATION OR RUIN.

1915 will go down to history either as the year in which the Voluntary System ruined England by skinning her of her best men, or as the year in which England discovered the imbecility of the Voluntary System and found her salvation in Militarism. The next few weeks will tell us whether England has found salvation.

If she has not, it will take some years to prove that Voluntarism has ruined the country, for even its first effects will only show when, after another year or two of war, our best and bravest are being killed off and the country has nothing but the shirkers left. The final ruin will come in a few generations, when the progeny

of the shirkers repopulate the land. However, we shall all be dead then anyhow. And there is always the satisfaction of knowing that every time England has been conquered the conquest has improved the breed.

Even in the last stages of her ruin Rome produced some magnificent men, so it is always hard to tell when one is in the middle of it whether a nation has really run to seed or is merely being badly misgoverned for the time being. 1915 has shown us that for a certainty one thing or the other is our lot. The next few weeks should show us which.

If the heart of the country is sound it will have refused to be bamboozled by "group enlistment" and such quack nostrums, and men will "wait to be fetched." Also they will show quite clearly that they intend the deliberate shirkers to be fetched at the same time. When that comes about, and not till then, will an able-bodied man of military age be able to walk about the streets in civilian clothes with a clear conscience.

PRO PATRIA.

All of which has, you will say, nothing to do with flying. As a matter of fact, it has everything to do with it, for on the state of the Nation's soul depends the spirit of the men who fly for her as well as of those who die for her. A lot of people fly on service because it is quite the most sporting way of being killed if one has to be killed anyhow. But there is quite a big gap between dying even in that fine spirit and dying with the feeling that one is going out for the sake of a country for which it is really worth while to die. And it is still up to England to show whether, as a nation, she is worth the supreme sacrifice. I should hate to think that all my young friends who have been killed on active service have merely died to provide higher wages for a lot of people who are shirking and striking in armament factories.

That type of workman does not know the meaning of Service. For instance, the other day a friend of mine who has the honour to run an Air Station was told that one of the mechanics wanted to see him. It was pay night, and there rolled up a specimen of the typical Cockney mechanic who had obviously enlisted to pose as an "airman" and avoid doing any fighting. He calmly presented a pay-sheet for the week, and pointed out that his money was short, as he had been working fourteen hours a day, and, according to Union rules, he was entitled to six hours a day overtime pay. "See here, my lad," said the Commander, "when you enlisted to serve the King you took on to serve for twenty-four hours a day. At present, you're ten hours a day short of that, so run away and thank God for it."

Cannot you see Thomas Atkins in his trench, or Bill Brewer of Brixham, slogging through a fog in an armed trawler, with lights out, and the Channel acrawl with cruisers, kicking for their bit of overtime? And whose descendants had better populate England? Atkins' or Brewer's, or Ike Smith the mechanic's? The

last certainly will, whereas the other two may get killed off "leaving no issue," as the genealogies say. Which is really the chief lesson of 1915.

THE FLYING SERVICES.

As for what has been done in the way of flying. Naturally, there has been no flying except Service flying. The *précis* of the aerial events of the war which follows hereafter is an endeavour to give a brief review of what has been done. Owing to the German Fleet choosing to intern itself—very sensibly and with excellent strategic reason—in the Kiel Canal, the Royal Naval Air Service has, rather fortunately under all the circumstances, been deprived of its chief reason for existence. Seaplanes are not yet sufficiently developed to fulfil the functions for which they are ultimately intended, and technical errors have retarded their development more than need have been the case. However, some fortunate members of the R.N.A.S. have had their chances of distinction, almost entirely in land warfare, and have made good. Their personal bravery has been worthy of the traditions of the Senior Service. In Mesopotamia, in East Africa, in the Dardanelles, in the Balkans, in Belgium, and in Brandenburg, the R.N.A.S. has been actively obnoxious to the enemy, and if as much cannot be said for sea operations it is because the enemy was not there.

The major share of obviously useful work has fallen to the Royal Flying Corps. The organisation and equipment—except as regards the aeroplanes themselves—of the R.F.C. is probably unsurpassed even by the Germans. The bravery of the personnel is unsurpassed even by the French. In skill and bravery combined the British pilots probably obtain a higher average than those of any other country.

The fact that the best performances of British pilots have in very many cases, possibly in a majority of cases, been put up on French machines which are not up to the standard of the best British machines in strength or workmanship is the fault of Government scientists and not of British manufacturers, and on the same self-satisfied heads rests the chief blame for the slowness of British output compared with the output of French factories.

Despite all these disadvantages British manufacturers can, and will yet, make the best aeroplanes in the world, but it has taken nearly all 1915 to convince the authorities in Whitehall that they have been very badly let down by the Royal Aircraft Factory and its appurtenances and hangers-on.

THE DAILY ROUND.

The R.F.C. has had little chance of doing showy work during 1915. Reconnaissance over gun-fire has become a matter of daily routine, and the routes to be covered are as clearly defined as a tram-line. Certain junctions to be inspected every day to see if troops are moving in unusual numbers. Certain roads to be watched. Certain positions to be photographed. That is all. But every day the German anti-aircraft guns shoot better, and the German "battle-aeroplanes" improve in effectiveness. Consequently, the daily journey is more of a strain on the nerves, and the casualty list of the Corps grows heavier week by week. Instead of being the safest job in the Army flying is again becoming one of the most dangerous.

All the while the flying becomes better and better. Getting out of and into grounds which in peace-time would have seemed absurdly inadequate makes for skill and address. Army reconnaissance must be done, so weather now counts for nothing. Fog alone makes flying impossible and, even then, it has to be a bad fog. Wet and wind are of no account. Clouds are

either a useful hiding place from guns, or an ambush whence one may pounce on a place to be bombed.

The other day a sailor friend of mine sent his wife a cutting from the Fleet's daily wireless message from the Army, with the suggestion that it might amuse me. The lady very kindly sent it on, and here is how it read:—"On the Western front the weather is continuing wet and stormy, and only mining, artillery and aeroplane engagements reported."

Figure to yourself, if you please, the particular kind of lunatic who would have dared to suggest a couple of years ago that in 1915 aeroplanes and pilots would have reached such a stage of development that they would go on fighting when it was too wet and stormy for anyone else to fight except underground, or with long range projectiles. Yes! 1915 has taught us something there.

AN EXPLANATION.

Finally, as regards the following review I have endeavoured to cut out everything which had no direct influence on subsequent events, or did not illustrate some definite point. In the early part of the year I have left in most of the mutual bombardments, and fights between aircraft, because they illustrate the trend of events. Later on, they became so much a part of the daily routine as to require mention only when some particular point gave one event or other distinction.

It may be noted that here and there I have mentioned some specific subject which has been discussed in this paper. I want it to be clearly understood that this has been done on purpose to show that certain matters were perfectly well known to people closely in touch with aviation months before the scientific authorities ever tackled those subjects. I disclaim absolutely any pretence to unusual foresight. I merely know what my friends connected with flying are discussing every day. If I know more than some of the authorities, thanks to my friends, then either the intelligence of those at the top is less than mine—in which case Heaven help England—or else they are not as closely in touch as I am with the people who know from experience what is wanted or what is happening—in which case something is very wrong with a system under which the head of a department only learns what is wanted some months after everybody in the trade which makes it is tired of saying it can supply it when asked. And that is about the case with the supply of aeroplanes and all that pertains thereto.

I am still in doubt as to whether it is better to be tied up in an orderly and scientific web of War Office red tape, or to be lost in a featureless tangle of Admiralty cotton-waste. Perhaps the former is the cleaner. That is about all one can say for it. So let us to our history lesson.—C. G. G.

THE DOINGS OF THE YEAR.

January.

The first matter of note in the New Year was the deservedly generous list of honours and special promotions conferred on officers of the Royal Naval Air Service and the Royal Flying Corps. A new decoration entitled The Military Cross was instituted for the Army. This decoration is confined to captains, commissioned officers of a lower grade, and warrant officers. The first list contained the names of three temporary captains and three sergeant-majors of the Royal Flying Corps.

On Jan. 1 French aviators bombarded Metz and Arncliffe.

A Zeppelin of a new type was reported to have left Friedrichshafen on the 1st. It was reported that the Zeppelin output at this period was a complete new ship every three weeks.

An Order in Council about Jan. 2 gave force to special

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regulations regarding the pensions of men in the Royal Naval Air Service.

On the 4th German aeroplanes were reported flying over the camp of the South African troops operating in South-West Africa.

On Jan. 13 a suggestion, based on performances of existing seaplanes, was made in THE AEROPLANE that small, fast, single-seater seaplane scouts of the "Schneider Cup" type should be used on seaplane carriers in addition to the heavier types of machines. It was some months before this suggestion was adopted and put into practical form. The type has proved exceedingly useful since.

A letter from an officer of the R.H.A., published in THE AEROPLANE on the 13th, drew attention to the value of the German kite-balloons, which were not used by the Allies.

A French communiqué of Jan. 7 recorded that letters from captured French aviators were dropped at Dunkirk by a German aviator—this showed that a certain amount of chivalrous feeling existed between the enemy Services.

On Jan. 7 German aeroplanes flying towards Dunkirk were repelled by artillery. On the 6th a Zeppelin appeared over Dunkirk and turned towards England. Apparently it did not reach the coast. On the 10th German aviators killed five people at Dunkirk, and one of the Germans was brought down by a French aviator. On the 10th also two German aeroplanes attempted to reach Paris but were driven off.

On the 10th aeroplanes bombarded various Montenegrin towns.

On Jan. 20 THE AEROPLANE, prompted by the experiences of observers on active service, argued at considerable length on the wisdom of fitting controls for both pilot and passenger to all two-seater aeroplanes. This system only came to be regarded as essential towards the end of the year.

An Army Order, issued on Jan. 17, detailed the re-organisation of the Military Wing of the Royal Flying Corps. Wings consisting of two, three, and in special cases four, squadrons were instituted, and the general organisation of the Corps was definitely laid down.

Continual aerial fighting in the neighbourhood of Dunkirk was reported from about Jan. 11 to 20th.

The "Official Eye-witness," writing on the 14th, emphasised the amount of specialised military knowledge needed by a first-rate observer, thus adding to the arguments frequently put forward in this paper against endeavouring to form an hermaphrodite Third Service for the Air, which its advocates imagine will work with Navy or Army as required and belong to neither.

The French communiqué of Jan. 18 stated that two German aeroplanes were brought down in Champagne on the 17th. New regulations were published by the Paris Prefect of Police regarding the darkening of streets. On Jan. 18 was recorded the first of a series of fatal accidents on French biplanes, caused by one part or another of the machine giving way in the air. A British officer was borne to death in this particular accident.

On Jan. 17 a German aeroplane was washed ashore on the coast of Jutland in Denmark.

French aeroplanes carrying British observers operated over the Sinai Peninsula looking for Turkish troops approaching the Suez Canal. A certain amount of useful observation was done and some humorous incidents occurred—for information apply R.F.C., Egypt.

With the approval of the Lords Commissioners of the Admiralty and the Army Council, the Royal Aero Club instituted a fund to be known as The Flying Services' Fund for the benefit of the officers and men of the Royal Naval Air Service and Royal Flying Corps incapacitated on active service, and for the widows and dependants of those killed. The fund was started with a subscription of £1,000 from M. André Michelin, of the Michelin Tyre Co., £1,000 from the Royal Aero Club, £1,000 from Flight



'A.M.' 1915

A Christmas Greeting from No. 11 Squadron R.F.C.

Lieut. F. K. McClean, R.N.A.S., £1,000 from Mr. T. O. M. Sopwith, £250 from Mr. Alec Ogilvie, and numerous smaller sums totalling £4,746 10s.

German aircraft attacked Dunkirk on the 22nd, dropping about 80 bombs. One of these machines was brought down by the Allies' aircraft.

Russian ships sank a Turkish transport on Jan 23 with 16 aeroplanes on board for use in the Caucasus. It was reported from St. Petersburg that German aeroplanes were using special bombs to assist their artillery in range finding. These bombs on striking the ground burst and made large clouds of smoke which made ranging easy. The weakness lay in the inaccuracy of bomb-dropping.

Various accounts appeared of the use of aeroplanes as mail carriers between Austrian headquarters and the besieged Austrians at Przemyśl.

On the 22nd a French aviator dropped various bombs on Bruges, and at about the same date British aviators bombarded Ostend.

A French aviator came down on the Island of Walcheren on the 22nd and was interned. The Netherlands Government began in January a series of unending protests to Berlin against the passage of German aircraft across Dutch territory.

From Denmark it was noted that the Germans had instituted a daily air patrol along the Danish frontier.

It was reported in a letter from the Cameroons that British troops found two aeroplanes at the German railroad, neither of which had been unpacked.

On Jan. 19 the first serious air raid on England took place. A Zeppelin dropped bombs on Yarmouth, Sheringham and Kings Lynn. Four people were killed. Attention at that time was drawn in this paper to the necessity for a proper scheme of defence against airships.

The scheme was still in course of preparation in December. Emphasis was laid on the uselessness of sending aeroplanes up in the dark to search for Zeppelins. The German papers of the period were naturally enthusiastic

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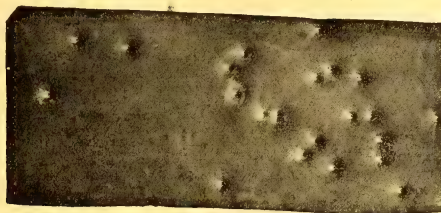
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about the effects of the air raid and advocated further efforts.

The committee of the Royal Aero Club awarded the Britannia Trophy for 1914 to Squadron-Commander Seddon, R.N.A.S., for his seaplane flight on Jan. 21, 1914, from Isle of Grain to Plymouth, as being the best single performance of the year.

The Official Eye-witness recorded that on Jan. 22 a single-seater British aeroplane attacked twelve German machines. Two other British machines went up to its assistance and put to flight the twelve Germans.

On Jan. 28 Dunkirk was again bombarded and the American Consul was nearly killed by a bomb which hit the consulate. The same night French aviators dropped bombs on German camps at Laon, Lafère and Soissons. German aeroplanes were brought down on the 27th and 29th.

From Paris the trials were reported of a new type Astra airship, which afterwards did very good work.

On Jan. 26 German aeroplanes were reported over Warsaw. Russian aircraft drove them off.

On Jan. 29 a new type German airship was reported to be patrolling Danish waters. This appeared to be a new type Parseval with the car built very close to the envelope.

At the end of January a new de Havilland biplane produced by the Aircraft Manufacturing Co., Ltd., made its appearance at Hendon in a purely experimental state. Later developments of the same machine proved to be highly successful.

February.

On Feb. 3 the question of night flying was discussed at considerable length in THE AEROPLANE, emphasis being laid on the need for reliable and powerful engines, for continual practice on the part of officers and men in the operations of starting and landing, and for the arrangement of landing lights on aerodromes. The question of night flying was still being discussed at the end of the year, and had not advanced very much further.

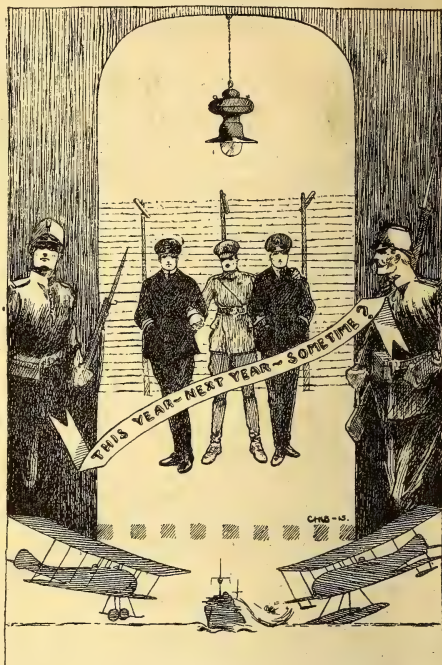
On Feb. 1 the Russian Naval General Staff reported that a Zeppelin had been brought down by Russian artillery at Libau. The vessel afterwards proved to be a Parseval.

American reports stated that aeroplanes of American origin with American pilots were being used in the Mexican civil war. Apparently the said Mexican war absorbed very little interest during the rest of the year.

It was reported that a British aeroplane dropped bombs on a Turkish column approaching the Suez Canal. This is the first record of aerial bombardment in Asia. It was reported from Cairo that a French pilot and a British observer on a seaplane were forced to land outside the British lines and were both shot in mistake for Turks as they were returning—the story turned out to be true.

On Feb. 10 considerable space was given in this paper to pointing out the obvious defects in the B.E.2c biplane, which was then being ordered from numerous firms to the exclusion of better machines. The criticisms then published have been amply borne out in the ensuing ten months.

The French communiqué of Feb. 4 records the capture of a German aeroplane. On February 6 a German kite-balloon was brought down. A report from Paris stated that the Germans already possessed a machine of the Aviatik type, fitted with four motors each of 225 h.p., capable of carrying four passengers, petrol for 10 hours and 2,000 lbs. of explosives. In connection with this report the need for really big fighting machines was pointed out in this paper. It was some months after this before the first big German fighting machine really appeared, and still longer before the Under Secretary for War stated in Parliament that big fighting machines were in course of construction in this country. If energetic use had been made of the intervening time this country



A Greeting from officers of the Flying Services interned in Holland at the Fortress of Wierickerschans.—Note the barbed wire, and the Dutch guards.

might easily have had its fighting machines in the air before all other belligerents.

On Feb. 4 raids by Allied aeroplanes were reported on Belgian coast towns, one pilot being reported as far east as Antwerp, and either this or another one was reported over Brussels.

Attacks by Allied aeroplanes on Altkirch, Mülhausen and Mülheim were reported from Germany, and darkening orders similar to that obtaining in London were put into force in the Rhine towns from Düsseldorf southward.

Two French officers landed in Holland on Feb. 3 and were interned.

Early in the month a report was received of a visit by a French aeroplane to one of the Syrian ports, when the local population was considerably perturbed.

On Feb. 7 the question of the relative importance of theoretical efficiency and effective performance in aeroplanes was discussed at some length in this paper, and various suggestions put forward by practical men were made for increasing the effectiveness of Service aircraft. The real value of inherent stability in war machines was also discussed. Many of the suggestions then made have since been adopted, and it is now recognised that for war service, except for flying at night and for the use of bad pilots who cannot be trusted on "tender" machines, inherent stability is hardly worth the sacrifices in speed and climb which it involves.

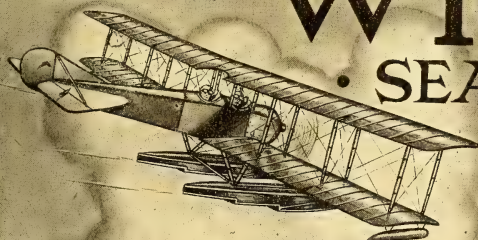
During the 24 hours terminating at 8 p.m. on Feb. 12, big aeroplane raids were carried out over the Belgian coast towns. Thirty-four Naval aeroplanes and seaplanes took part in the raids.

The Official Eye-witness recorded on February 5 that an R.F.C. pilot dropped ten bombs on a German aerodrome at Lille, also that one of our aviators attacked two German machines which he pursued till they landed at their

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own aerodrome, where he threw bombs at them and fired at them with his machine-gun.

A letter from a gunner officer, published on Feb. 17, drew attention to the bad shooting of our anti-aircraft guns at the front, and it is satisfactory to know that very considerable improvement took place in the ensuing 10 months.

A Paris report of Feb. 11 recorded the capture near Verdun of the German officer who first threw bombs on Paris. A French aviator also destroyed a kite-balloon.

German reports recorded the dropping of about 100 bombs on Verdun.

Various false reports from Holland alleged the bombardment of Düsseldorf and other Rhine towns which were beyond the reach of aeroplanes.

Mr. Alfred Stead, of the "Daily Express," cabling on Feb. 7 from the Balkans, reported constant communication by aeroplane between the Austrians and Bulgarians. This was practically the first intimation the British public had of any collusion between the Central Powers and Bulgaria, and of course it was neglected, with the serious effects recently seen.

From Serbia it was reported that an Austrian aeroplane dropped bombs on frontier towns on Feb. 6.

It was announced from Italy that the sum of £660,000 had been voted for military aviation, and a decree was issued entirely reorganising the aeronautical corps.

Various messages from South Africa emphasised the good work by the only two aeroplanes in the possession of the German troops in S.-W. Africa. At that time the Union troops possessed no aircraft.

In the middle of February the Home Office distinguished itself by producing an amusing poster reminiscent of an insecticide advertisement, which purported to show the public the silhouettes of the more common types of German and British aeroplanes. The majority of them were out of date and scarcely any of them were recognisable. A considerable sum of public money must have been wasted in this way.

On Feb. 24 the use and desirability of kite-balloons, which up to then had not been used in the British Service, was discussed at considerable length in THE AEROPLANE. Some months afterwards this form of aerial observation post came into common use in the Naval Air Service, and after its utility had been thoroughly proved in co-operation with artillery on land, as well as with Naval guns at sea, kite-balloon squadrons of the Royal Flying Corps were formed.

On Feb. 16 the Admiralty announced a further raid on the Belgian coast towns by 40 aeroplanes and seaplanes based on Dunkirk. Eight French aeroplanes simultaneously created a diversion by attacking the Ghistel aerodrome, near Brussels.

On Feb. 20 an Admiralty dispatch disclosed the existence at the Dardanelles of His Majesty's seaplane ship "Ark Royal," the first ship to be built specially as a seaplane carrier.

A letter published on Feb. 24 records the loss of a seaplane and its pilot in an attempt to destroy the Königsberg. This loss was confirmed by a later letter, but curiously enough has never been mentioned officially.

A dispatch from Field-Marshal Sir John French, published on Feb. 16, covering the operations from November 23 to Feb. 1, records that in the 70 days there were only 13 on which the Royal Flying Corps was unable to carry out reconnaissance. In the period approximately 100,000 miles had been flown. Five German aeroplanes were known to have been brought down. In his dispatch Sir John French definitely stated that without accurate observation from aircraft long range artillery fire is merely waste of ammunition.

The French communiqué of Feb. 22 records that a Zeppelin bombarded Calais that morning killing five persons.

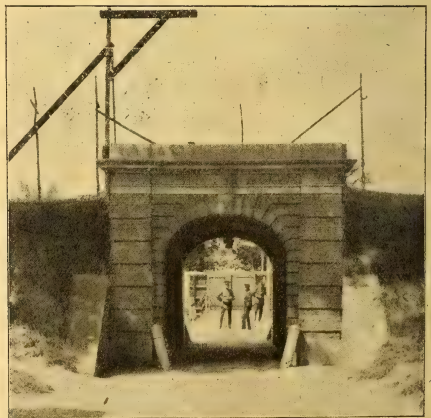
German reports admit that on Feb. 7 Naval Airships L. III and L. IV were wrecked in a heavy storm on the coast of Denmark. Four men belonging to L. IV were lost along with the airship. L. IV was a Schütte-Lanz and L. III a Zeppelin.

The "New York Times" of Jan. 25 announced the presentation of a trophy value 5,000 dollars and five prizes of 1,000 dollars each by Mr. Glenn H. Curtiss for competition among military and naval aviators.

On Feb. 21 a German flew over Braintree and Colchester, dropping a bomb on the latter town. The machine is believed to have been an aeroplane and not an airship.

The "Melbourne Argus" of February 24 recorded that the Indian Government had sought the assistance of the Australian Commonwealth in providing aviators and equipment for active service. It turned out afterwards that these officers were required for the Persian Gulf.

A message from THE AEROPLANE'S Danish correspondent recorded that Lieut. Gran, formerly of the Antarctic expedition, had instituted a regular aeroplane patrol of the southern and western inlets of the Norwegian seacoast, searching for belligerent submarines in neutral waters.



Photographs of the Gates of Wierickerschans—where various flying officers are interned. This gate is indicated in the Christmas card reproduced on the foregoing page.

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A message from Bombay dated February 13 records seaplane flights in Bombay harbour on the preceding day by one of seven machines brought out from England by the mail steamer "Persia." It is possible that these may have been intended for the Persian Gulf operations, but apparently they did not go there.

It was noted that on February 25 three seaplanes at the Dardanelles had been dropping bombs from only 3,000 ft. Good work by aviators was also reported from Egypt.

On Feb. 28 a Belgian aviator dropped bombs on Ostend, and German aviators bombed Nieuport. A French aviator also dropped bombs in the fortress of Metz. French aviators dropped bombs on Freiburg-im-Breisgau and at Mülhausen.

On Feb. 27 two German officers were landed at Lowestoft by a fishing smack, having been rescued from a damaged seaplane in the North Sea after starting on the raid which reached Colchester.

The "Melbourne Argus" of February 17 made the important announcement that the Australian Commonwealth Defence Department had definitely decided to construct aeroplanes in that country and intended to encourage local engineering firms to build not only aeroplanes, but engines.

March.

On March 3 the question of bomb-dropping raids was discussed in THE AEROPLANE, and it was pointed out in the course of argument that a number of comparatively small machines is probably a better proposition on a raid than a smaller number of very large ones carrying the same total quantity of bombs. The folly of the official policy of making a machine so safe against breakage in the air that it is weighted up till it is unsafe to fly over hostile fire was also pointed out. On the same date a closely reasoned article by Mr. Roger Bayons pointed out that aircraft, instead of hastening the end of war, materially assisted in prolonging it, and argued that assuming the war to last until the summer of 1916, the actual amount of operations would only be as much as would have occupied six months of war under the old circumstances.

Early in March Sir Charles Wakefield, now Lord Mayor of London, offered a prize of £500 to the first person or persons responsible for bringing down a Zeppelin in the United Kingdom.

It was recorded from Italy that the Italian War Office had granted permission for the export to the French Government of a few examples of the 300 h.p. three-engined Caproni biplane. Apparently, however, these machines were never delivered.

In the U.S.A. a controversy was started as to whether the supply of aeroplanes by America to the Allies was an infringement of neutrality.

The destruction at Pola of a Zeppelin lent to the Austrians by Germany was recorded, but has never been definitely confirmed.

The Danish correspondent of THE AEROPLANE noted on March 3 that the crew of the Schütte-Lanz II had been granted the Iron Cross for co-operation with submarines which torpedoed the "Cressy," "Aboukir" and "Hogue."

Admiralty reports of March 4, 6 and 8 referred to the use of seaplanes at the Dardanelles. The last date included reference to various flying officers who were brought down by gun fire—none were killed.

It was recorded that in the Heligoland action on Jan. 24 a Zeppelin and a seaplane endeavoured to drop bombs on the vessels which went to the rescue of the survivors of the "Blücher."

On March 10 various assaults by German aircraft on shipping in the North Sea were recorded.

A French official report of March 5 recorded that a German aeroplane was brought down near Verdun. Also an account was given of the destruction of powder works at Rottweil by a French aviator.

An official French communiqué of March 7 recorded that during the period between the outbreak of war and Jan 31 the French Flying Corps carried out 10,000 reconnaissance and had flown over 18,000 hours, covering a total of not less than 1,800,000 kms, "despite grievous losses, often more severe than those of other arms."

A German report of March 2 stated that a British aviator dropped two bombs on a German steamer interned at Flushing. This report was never confirmed or denied.

The Russian report of March 2 records that aeroplanes saved two regiments of the 29th Russian Division after the great defeat in East Prussia by guiding them through gaps in the enemy's lines, and it is alleged supplied them with ammunition. The latter part of the story seems improbable.

The Italian Military authorities made it known that the airship M.L. had reached an altitude of 11,000 ft., which was about the record at that time for a medium-sized airship.

Reports from Constantinople, dated March 3, recorded for the first time the use of aeroplanes by the Turks.

On March 17 the question of the age limit for aviators was discussed in THE AEROPLANE. It was pointed out that a fit man of 30 would stand hardship better than a youth of 20. This seems to have been borne out in many cases during the year, where pilots and observers of more than 25 years have lasted better than younger men. The question of the prevention of fire on aeroplanes was also discussed, but little seems to have been done to increase safety in this respect.

A letter from an officer in the Persian Gulf operations published on March 17 emphasised the need for aircraft in that war area, and suggested the use of seaplanes on the Tigris as being more practicable than land machines, owing to the sand. Seaplanes were used there in October.

On March 11 it was officially announced that British aeroplanes had destroyed the railway junctions at Courtrai and at Menin, and on the 13th that the junctions at Don and Douai were destroyed. These were the first of a long series of bomb-raids on railways.

The German communiqué of March 13 recorded that three British aviators had been shot down.

From Geneva it was reported on March 11 that the ninth new Zeppelin constructed since the beginning of the war had begun her trials, thus making an output of nine airships in thirty weeks.

About March 13 an order was issued in Italy that no aliens would in future be allowed to fly in Italy, and that school machines would only be allowed to fly within a radius of a mile of school sheds. No flying other than that of military aviators would be permitted within forty miles of the Austrian frontier.

The formation in Canada of "Curtiss Aeroplanes and Motors, Ltd.," with an initial capital of 50,000 dollars, was announced on February 20.

A message from Australia, published on March 17, stated that some weeks before the Australian height record had been raised to 12,500 feet by Mr. Delfosse Badgery on a Caudron biplane. It was also stated that Lieuts. Harrison and Merz, of the Australian Aviation Corps, had taken two aeroplanes to New Guinea to assist in the occupation of the German section of that island. It turned out that the aeroplanes were not needed, but this was Australia's first venture in aerial war.

On March 20 a German aeroplane from Ostend dropped bombs on shipping in the Downs and returned without doing damage and without being damaged.

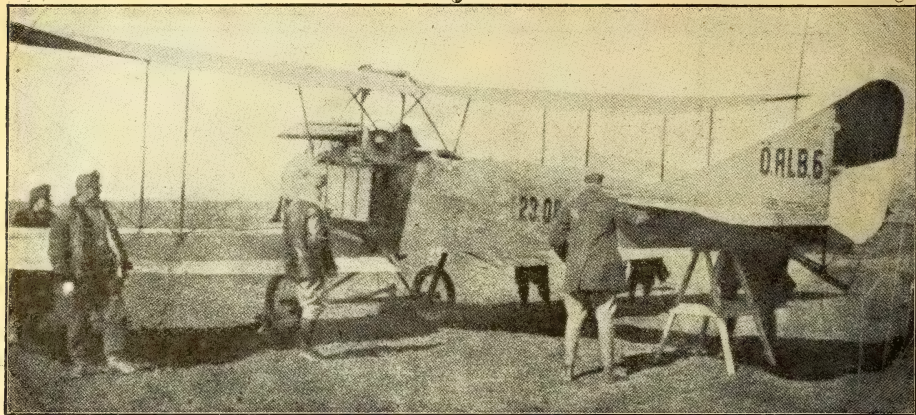
It was announced from Paris on March 17 that a French aviator had dropped bombs on the barracks at Colmar, in Alsace, and on the 18th that the British bombed a railway station at Conflans.

A Zeppelin bombed the railway station at Calais on the night of the 17th, and on the night of the 20th four

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The last aeroplane to leave Przemyśl before its capture by the Russians in March. The machine is an Austrian Albatros, hence "O.A.L.B." on its tail.

Zeppelins started to bombard Paris. Two of them turned back before reaching the city. The other two did some damage in the suburbs. After they had gone an aeroplane squadron started in pursuit, but did not find them. On their way back the Zeppelins did some damage at Compiègne. This was the first and last occasion on which Zeppelins flew over Paris, at any rate up to the date of publication.

A French communiqué of March 22 gave particulars of various aerial bombardments carried out by French aviators in Belgium, Champagne, and Alsace, and also at Freiburg-im-Breisgau.

On the 20th a German aeroplane flew over Nancy, but dropped no bombs. The German communiqué of March 18th accused the French aviators of dropping bombs on open Alsatian towns and killing some children. The bombardment of Calais was stated to be a reprisal for this.

On March 10th, three days before the capture of Przemyśl, three spherical balloons left the fortress, but owing to a change of wind were carried into Russia and captured.

An Austrian aviator who was in the siege of Przemyśl stated that in the course of the siege the Austrians lost 12 aeroplanes, 7 pilots and 7 observers, and that at the end of the siege only two machines were available.

A message from Washington dated March 10 recorded the ordering of two dirigible balloons by the American Navy.

On March 17 another big raid on Belgian coast towns was carried out on R.N.A.S. machines from Dunkirk. On March 24 the Admiralty announced a successful air attack by two machines of the Dunkirk squadron on German submarines under construction in the Cockerill yards at Antwerp, considerable damage being done to the works and to two submarines.

An official dispatch dated March 22 records the dropping of bombs on Lillers, St. Omer, and Estaires by German aircraft. The bombs were dropped from about 9,000 feet, which, the dispatch says, was a tribute to the respect in which the Royal Flying Corps is held by the enemy!

During the week ending March 31 a number of attacks by German aircraft on merchant vessels at sea were recorded, but in no case was any material damage done.

The French communiqué of March 23 recorded that a German aviator dropped bombs in Reims, and on the 26th that six French aviators bombarded the airship-sheds and station at Metz and the barracks at Strassburg.

The German communiqué of March 23 records the

British attack on Ostend, and claims that a French aviator was brought down over Verdun and another over Freiburg in the raids at that period.

The Russian communiqué of March 29 records the operations of Russian seaplanes over the Turkish batteries on the Bosphorus.

It was recorded from Tenedos that a German aeroplane flew over that island on March 28, and that this was the first aeroplane seen by the inhabitants of the island, which was afterwards to become the headquarters of the Allies' aircraft.

On the 24th three Austrian aeroplanes threw about twenty bombs on various Montenegrin towns.

On the 23rd it was reported from Egypt that aeroplanes gave warning of the approach of Turkish forces, which were effectively met.

The French communiqué of March 30th recorded more bomb-dropping at Reims, one bomb hitting the Cathedral. By way of retaliation, French aviators the following night dropped bombs on various stations and bivouacs behind the German lines, and in Belgium.

The Russian communiqué of March 31 recorded considerable activity of German aeroplanes over Ostrolenka, and claimed that one had been brought down over Jedwabno.

April.

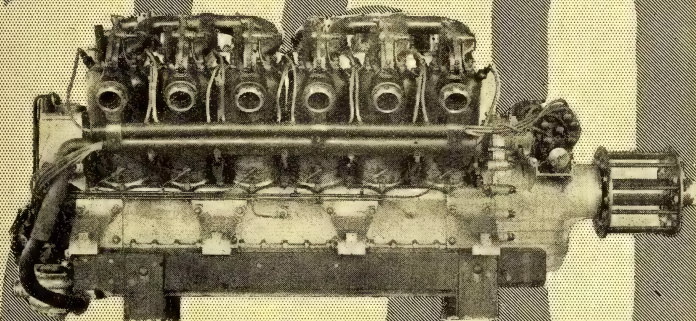
On April 1 the Admiralty issued an announcement of a second successful attack on the Cockerill yards at Antwerp by two officers, who started by moonlight in the early morning. Considerable damage was done.

The communiqué of April 1 mentions the aviator Lieut. Garros as having brought down an Aviatik with a machine-gun by himself. This is noteworthy because M. Garros was the first aviator to use a machine-gun firing through his propeller, the blades being fitted with deflector plates.

The communiqué of April 2 records the bringing down of a German over Soissons, making the third German bagged in twenty-four hours. A big aerial bombardment of Vignacelles by French aeroplanes was recorded on the same date.

A note from Italy records the order by the Government of a number of 6-cylinder 100-h.p. F.I.A.T. engines for the aeronautical corps.

On April 14 the armament supply problem in its relation to aircraft was very fully discussed in THE AEROPLANE, and suggestions were made as to the increase of efficiency in factories and as to the limitation of liquor



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consumption, some of which were brought into force by the Government some six months later.

An official notice published on April 14 placed on record the rates of pay for the new grades in the R.F.C. of Wing Commander, Wing Adjutant, and Equipment Officer; also for the non-commissioned ranks of Technical Quartermaster-Sergeant and Non-technical Quartermaster-Sergeant.

The French communiqué of April 10 recorded the dropping of bombs of 155 mm. diameter on military points at Bruges; and the communiqué of the 12th stated that a German airship dropped seven bombs on Nancy.

The German communiqué of the 12th stated that Chanzy was bombarded as a reprisal for a French attack on the open town of Mülheim.

A Russian communiqué of the 7th recorded bomb-dropping by Germans at Radom and by Austrians at Jaslo, and the communiqué of the 8th claimed that the Russians had sunk a German seaplane which had dropped bombs on the "peaceful town of Libau."

A request was sent out by the "Construction and Repair and Steam Engineering Department" of the United States Navy for tenders for hydro-aeroplanes and power plants from a number of the leading constructors in America. That such a matter should be within the purview of such a department proves beyond doubt the blood-relationship of America and England.

On April 21 the question of the production of pilots received attention in THE AEROPLANE, and the curious fact was pointed out that, while the Censorship takes the greatest trouble to avoid the mention of any locality concerned with the production of armament, it regularly permits the publication of the lists of aviators who have taken their certificates, together with the names of the various aerodromes, both Service and civilian, at which these certificates are taken, so that the enemy has full knowledge of precisely the number of pilots trained in this country and the precise location of our aerodromes. At the end of the year this information was still permitted to be published. The whole system of the production of pilots was discussed.

An official dispatch from G.H.Q. published on April 14 recorded that in the 72 days including February 2 and April 14 there were only 3 days on which reconnaissances were not made. The total of approximately 130,000 miles were flown by R.F.C. pilots, despite almost continuous bad weather.

An official notice of April 19 recorded that two German aeroplanes had been brought down in Flanders.

The French communiqué of April 14 stated that a Zeppelin dropped bombs on Bailloul and killed three civilians. Three German aeroplanes were brought down on the previous day by the French. A communiqué of the 15th stated that a German Aviatik threw bombs onto the hospital at Mourmelon. As a reprisal for the bombardment of Nancy, a French aeroplane dropped bombs on Headquarters at Mézières. Freiburg was again bombarded, and 15 machines again bombarded Ostend. All the French machines escaped undamaged. On the 16th Leopoldshöhe, Rothweil, and the power station at Metz were bombarded, and on the 17th a French airship bombarded Freiburg. On the 18th it was noted that another German was brought down.

On the 19th that the famous aviator Garros had been forced to land in German territory and was made prisoner.

German communiqués between April 13 and 19 denied that damage was done by the French at Bruges, stated that only civilians were killed at Freiburg, and claimed that naval airships bombarded several defended towns on the British S.E. Coast, and that an aviator bombarded Calais and dropped bombs on Greenwich. Malden in Essex, Weybridge (error for Woodbridge), Sittingbourne, and Faversham were also mentioned as being bombarded.

A Rome message stated that one of the two Zeppelins lent to Austria was destroyed in the Adriatic on April 16.

The Russian communiqué of April 17 recorded that German aeroplanes operating in flotillas of 12 or 15 had been bomb-dropping on villages behind the Russian front—indicating a supply on the East front which accounted for the scarcity on the West front.

An official note from Egypt on April 18 records a scouting flight of 170 miles beyond the Suez Canal, and that a seaplane directed the fire of a French cruiser bombarding Turkish camps on April 16 and 17 at El Arish.

A German airship dropped bombs in the neighbourhood of Newcastle on the 15th, and another visited the Lowestoft district and Malden; and on the 15th a seaplane dropped bombs near Eastchurch, Sittingbourne, and Canterbury. It left via Whitstable.

On April 28 reference was again made to the trouble caused by the interference of Trade Unionists with the amount of work turned out by energetic workmen.

On April 23, on the return of a naval airship to the sheds at Hco, one of the air-mechanics named Standford was killed owing to the machine ascending again after he had got hold of the trail rope, and taking him with her. The unfortunate man held on for nearly ten minutes, and finally fell from a height of some 500 feet. This was the first accident of the kind which had happened in England, though similar accidents had previously happened in France and Germany.

Reports from G.H.Q. on April 19, 22, and 26 recorded the continued activity of the R.F.C. Two German machines were brought down in three days, and one R.F.C. officer drove off three hostile aeroplanes. Another officer destroyed a German airship-shed with an airship in it, although he had to fly close to a captive balloon set to guard the airship, and also had to run the gauntlet of fire from the ground.

Railway junctions were destroyed by British aeroplanes at Courtrai, Tourcoing, Roubaix, Ingelmünster, Staden, Langemark, Thiel, and Roulers. The French communiqué of April 21 records the bombardment of the headquarters of General von Strantz and of an electric station at Lorrach in Baden.

Apocryphal this a German communiqué of April 21 states that a silk factory belonging to a Swiss was destroyed, also that as a reprisal for Russian air attacks on Interburg and Gumbinnen (open towns) German aircraft threw 150 bombs on the junction at Bielostock. It was also claimed that a Turkish aviator dropped bombs on Allied ships near Tenedos. A German note published on the 21st stated that German aviators had destroyed a shed at Belfort containing "English aeroplanes."

The Russian communiqué of April 21 refers to a bombardment of a German position on the 24th by "Ilia Mourametz aircraft," this being the first official mention of the big Sikorsky aircraft by the Russians.

In view of recent operations in British East Africa, it is worth while to note that on April 3 a letter appeared in the "Leader of British East Africa" on the subject of subscriptions raised in B.E. Africa to present aeroplanes to the R.F.C. It appears now as if it would have been better for B.E. Africa to have spent its money on aircraft for its own use.

An official note issued in December records that a naval squadron bombarded the "Königsberg" on April 25, the spotting being done by R.N.A.S. shoregoing machines, one of which fell into the river and nearly drowned its crew.

The Naval Minister for Sweden issued on April 22 a note detailing the organisation of that nation's aviation service. The scheme is to have a number of coast-defence stations, each containing three aeroplanes, and it is worth noting that the commandant of the flying corps is to be subordinate only to the Chief of the Naval Staff.

A Russian note of April 26 claimed excellent results from a bombardment of the Bosphorus forts by Russian warships, for which the spotting was done by seaplanes.

German communiqués between April 27 and 30 claimed the destruction of five of the Allies' aeroplanes. It was

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also claimed that the fortifications of Harwich were bombarded on the 27th. On May 2 and 3 the Germans claimed a bag of three more French aeroplanes.

The Montreal "Daily Star" of April 22 records the appointment of Mr. J. A. D. McCurdy to work the Government aviation school at Toronto.

The French communiqués of April 28, 29, and 30 recorded aerial bombardments of German positions at Bol-viller, Chambley, and Arnville, on the Zeppelin sheds at Friedrichshafen, and on the works at Leopoldshöhe. On the 29th it was stated that precise information had been received that the Zeppelin which dropped bombs at Dunkirk on the 22nd had been badly hit and had come down completely disabled near Bruges.

The first mention of the use of aircraft by the Serbians occurs in a communiqué from Nish stating that on the morning of April 28 that country's aviators were engaged in a "quick-firing contest" with hostile aviators. Doubtless machine-guns are meant, and not quick-firers. It appeared afterwards that the Serbians had the assistance of sundry well-known French aviators, including MM. Paulhan and Martinet.

The Official Eye-witness published on April 30 an account of the gallant action of Lieut. W. B. R. Moorhouse, R.F.C., in descending to 300 feet to destroy the junction at Courtrai, and flying some 30 miles home after being badly wounded to make his report, with the result that he died from his wounds, when by descending when first hit he would probably have survived. This gallant action won a posthumous V.C. for this young officer, the first V.C. won by the R.F.C.

On April 30 a Zeppelin or other enemy airship visited Ipswich, but did little damage. On May 8 the Secretary of the Admiralty stated that German statements that a British submarine had been sunk by a German airship were false, and that, on the contrary, the submarine had returned uninjured and reported that she had damaged the airship.

May.

An Admiralty note of May 1 stated that the position of the big German gun which bombarded Dunkirk had been located by R.N.A.S. pilots, and that two large bombs had been dropped on it. Whether it was hit or not was never made clear, but it certainly did no further damage to Dunkirk.

The C-in-C, B.E.F., reported on May 3 that a German aeroplane was chased by an R.F.C. pilot to within range of the British trenches and was then brought down by rifle fire. This was the first instance of this method of operation, which was probably as dangerous for the pursuer as the pursued.

A correspondent of the "Morning Post" quoted on May 5 stated that before the big battle of Ypres a British aeroplane was brought down by the fire of the Canadians and proved to be manned by two Germans. The suspicion of the Canadians was drawn to three British aeroplanes flying over them by the fact that although the German gunners were firing more or less in their direction, they took very great care never to burst their shells anywhere close to them.

A note in the monthly magazine of the Italian Aero League complimented the R.N.A.S. on its good work, and said: "From the Cologne raid to these operations in the Dardanelles has been a continuous sequence of triumphant events which places British aviation far beyond any other air service in the belligerent forces, and tells of admirable preparation."

A communiqué from the C-in-C, B.E.F., dated May 9, records further successful attacks by the R.F.C. on railway junctions in Flanders.

A French communiqué of May 5 records artillery bombardment of German positions, and confirms the damage of a Zeppelin at Friedrichshafen on April 28.

A German communiqué of May 10 claims that an airship dropped bombs on the "fortified place" of Southend.

A South African communiqué dated May 7 announced the first arrival of aeroplanes to co-operate with the S.A. Union Forces in German S.W. Africa. The delay in sending aircraft to this war area may be noted by comparison with reports of the use of aeroplanes by the German forces in nearly all her remote colonies. The pilots with the British Forces included sundry South African officers and several R.N.A.S. pilots lent to South Africa. They did excellent work.

The "North China Mail" of March 20 noted that the Chinese military aviation school at Nan Yuan had passed 33 students for their certificates a few days before. The equipment included 12 Caudron biplanes and two monoplanes, one built in China. (News received in May.)

It was recorded on May 3 that three or four Zeppelins were seen off the English coast, but apparently none reached the land; but on May 10 about 100 bombs were dropped in the Southend district.

On May 17 the Secretary of the Admiralty announced that a Zeppelin had attacked Ramsgate that morning, was chased away by aeroplanes, and that off Nieuport, in Belgium, she was attacked by eight naval machines, one of which rose above her and dropped four bombs on the airship. Apparently, however, the bombs failed to explode, or, at any rate, they failed to set fire to the airship, as she returned to her base merely somewhat damaged. This, however, was the first occasion on which an aeroplane succeeded in dropping bombs on a Zeppelin.

On May 19 it was noted that Captain Murray F. Sueter, C.B., Director of the Air Department of the Admiralty, had been promoted to the rank of Commodore, 2nd class, a well-deserved reward for continued hard work ever since the foundation of the R.N.A.S.

A dispatch from G.H.Q. dated May 11 recorded some activity by the R.F.C. in bombing railways and bringing down German aircraft.

A French communiqué of May 15 records the first bringing down of a German captive balloon.

A German communiqué of May 17 records airship attacks on Dover and Calais.

Reports from America published on May 19 record the organisation by the U.S. Navy of a proper flying school at Pensacola, Flor.

A speech made at a meeting of the Aeronautical Society by the Assistant Director of Military Aeronautics drew attention to the improvement in German aeroplanes during the period immediately preceding this date, showing that the Germans possessed machines faster than all but our fastest, and that the German aviators were becoming much bolder, so that it was necessary for the R.F.C. to send up two aeroplanes together, one to reconnoitre and one to fight. The A.D.M.A. ascribed these improvements to the quality of German aero-engines, but particularly emphasised the need for speed and climb and ease of handling in aeroplanes of war. In the same issue of THE AEROPLANE it was explained at some length how it came about that this country was lacking in engines and in aeroplanes superior to those possessed by the enemy.

The Italian communiqué of May 24 was the first mentioning the entry of Italy into aerial warfare, which notes that Austrian aeroplanes made an attack on Venice, Ravenna, and Ancona, and were driven away by anti-aircraft guns, by Italian aeroplanes, and an airship.

On the 22nd a German airship broke loose at Königsberg and was last seen "going west" at Odense, in Denmark. The type is not stated.

The French communiqué of May 26 records considerable activity the previous day, and French aircraft dropped 203 bombs, of which 82 were 25-lb. bombs and 14 of 100 lbs. The points bombed included German aviation depôts and reserve aircraft parks near St. Quentin.

A German aeroplane that attempted a raid on Paris was brought down near Soissons. On the 27th a flotilla of 18 aeroplanes bombarded the chemical factories at

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Ludwigshafen, in Baden. This was one of the most important raids of the war. The German communiqué of the same date claimed that Ludwigshafen was an "open town" and that several civilians were killed. An armoured French machine came down in the course of the raid and a French major was captured.

On the night of May 26 and 27 another Zeppelin visited Southend and dropped about 30 bombs. Comparatively little damage was done. On June 1 it was announced that during the previous night Zeppelins were reported near Ramsgate, Brentwood, and certain outlying districts of London. By this time the Press Bureau had awakened to the wisdom of not permitting the Press to state exactly where raids took place, as before that date British newspaper accounts of the raids practically operated as corrections for German marksmanship.

Further Austrian aerial attacks on Venice took place on May 28, and Italian aviators made various attempts to destroy bridges on the Austrian front. On the night of the 26th several of the Italian airships did considerable damage to the Trieste-Labresina railway.

British, French, Russian, Turkish, and German communiqués record the usual mutual strafings, so after this date it may be taken that mutual bombing went on every day unreported.

June.

On June 2 the arguments for and against making a third Air Service apart from the Army and Navy was again fully discussed in the paper, and apparently was approved by the great majority of the flying officers of both Services.

On June 9 the question of increasing output by improving the class of Government inspector used was discussed in THE AEROPLANE. The arguments did not entirely meet with the approval of the authorities, but their accuracy was admitted by many of those most nearly concerned, and considerable improvement all round took place at a later date.

The Admiralty announced on June 7 that an airship, with a Zeppelin inside, at Evère, near Brussels, had been destroyed by two R.N.A.S. officers, and that on the same morning another R.N.A.S. officer had met a Zeppelin in the air between Ghent and Brussels and had destroyed it. This was the first occasion on which a Zeppelin was actually destroyed by an aeroplane while flying. Ultimately, it was ascertained that the shed destroyed by the other two officers also contained an airship, probably a Zeppelin. For this feat Flight-Lieuts. J. P. Wilson and J. S. Mills were given the Distinguished Service Cross, and Flight Sub-Lieut. Warneford received the V.C. for destroying a Zeppelin in the air.

The French communiqué of June 3 recorded that 29 aviators dropped 178 bombs on the headquarters of the German Imperial Crown Prince that morning. All the aircraft got away safely, and so did the Crown Prince.

The Austrian and Italian communiqués of June 2 agreed that Pola was bombarded by Italian aircraft, but the Austrians claim that little harm was done. Austrian aeroplanes dropped bombs on Bari and on Brindisi early on June 1. An Italian cruiser picked up a German aeroplane belonging to the Austrians on June 6. Apparently the aviators had been drowned.

It was reported on June 9 that the Republic of San Marino, which is entirely surrounded by Italian territory, was seriously considering the question of going to war with Austria.

On June 9 a quotation from a correspondent at Gallipoli made the first mention of the use of captive balloons by the English forces at the Dardanelles. Apparently the balloon in question was an ordinary spheric, but soon afterwards the R.N.A.S. kite-balloons came into use.

On June 6 Mr. Harry Hawker, on a Sopwith biplane of a new type with a 100-h.p. Gnome engine, broke the British height record by reaching a height of over 18,500 feet, thus beating the previous record of 14,500 feet.

An Admiralty announcement on June 5 recorded that

hostile airships visited the East and S.E. coasts of England, and another communiqué of the 7th announced that a Zeppelin visited the East Coast. The later visit resulted in five deaths and 40 injured.

On June 16 the whole question of the proper organisation of the aeroplane industry with a view to increasing the output of aircraft was again discussed in THE AEROPLANE. The impossibility of obtaining the maximum output under the present haphazard system of organisation of material and labour was pointed out. Up till the end of the present year no organisation had been attempted.

An Austrian communiqué of June 10 mentions for the first time aerial bombardments of Serbian positions, stating that explosions were caused in the arsenal at Kragujevac. A communiqué of the 8th states that the Austrian naval seaplane L. 48 destroyed the Italian airship "Cita di Ferrara" on that day. The Italians claim that the airship was obliged to descend owing to engine trouble and caught fire. In either case it seems rather extraordinary that the crew managed to escape.

A Turkish communiqué of June 14 claims that a seaplane sent up from a British cruiser at Endina, on the Red Sea, was shot down. This is the first mention of aircraft on the Red Sea, and the story lacks confirmation.

On June 23 the general question of dealing faithfully with Zeppelins was discussed in THE AEROPLANE.

The French communiqué of June 15 records the bombardment early that morning of Carlsruhe, the capital of the Grand Duchy of Baden. Twenty-three aeroplanes dropped 130 large bombs on the places aimed at, particularly on the Castle, the arms factory, and the station. All but two of the aviators returned safely. Germany, as usual, retaliated with a moan about the "open town" of Carlsruhe, and also complained that a church had been bombarded near Ostend during divine service. It is worth noting that the French seldom complain on such grounds, but seem to recognise that war is war.

On June 16 the Admiralty announced another Zeppelin visit to the N.E. Coast.

On June 23 the "Official Eyewitness" recorded one of the bravest acts of the war, when a British pilot whose pusher biplane had been set on fire by a German shell succeeded in bringing the machine down safely from 2,000 feet, although he and his passenger were seated practically in a bath of fire caused by the petrol running into the fuselage, the fire even causing the ammunition for the machine-gun and for the pilot's own pistols to explode while descending. As he landed the machine absolutely fell to pieces owing to the fire.

(To be continued.)

PRACTICAL BENEVOLENCE.

Mr. Patrick Alexander has handed to the Headmaster of the Imperial Services College, Windsor (Mr. E. G. A. Beckwith), a cheque for £10,000 "for the training of character and development of knowledge" among the boys of the school. Mr. Alexander is known as one of the pioneers of aeronautics in this country, and had previously given the College an aeronautical laboratory which has recently been fitted up for engineering. He was also the donor of the Patrick Alexander prizes for British aero-engines, which were won by the Green engine in successive years, and would have been of very great value in improving the breed of British engines if they had been backed up by Government orders. Even as it was, these prizes encouraged British enterprise at a time when all other encouragement was lacking.

THE SEAPLANE SUPPLEMENTS.

Copies of both the seaplane pictures published with this issue may be obtained printed on special art paper suitable for framing. The price of these prints packed in a cardboard roll is 1s. each, post free, and orders should be sent to the publishers of THE AEROPLANE, The Wm. Dawson Publishing Co., Ltd., Brems Buildings, E.C.

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Naval and Military Aeronautics.

From the "London Gazette" Supplement, December 20th, 1915.

WAR OFFICE, December 20th.

REGULAR FORCES.—STAFF.—Deputy Director at War Office.—Lt. Lieut.-Col. D. S. MacInnes, D.S.O., R.E., from an Assistant Director, and to be temp. Col. whilst so employed, vice Bt. Lieut. Col. W. S. Brancner, R.A. October 31st.

Assistant Directors.—Maj. (temp. Lieut.-Col.) J. D. B. Fulton, C.B., R.A. (since deceased), from Chief Inspn., Aeronautical Inspn. Dept., and retain temp. rank whilst so employed, vice Temp. Col. D. S. MacInnes, D.S.O. October 31st. Bt. Maj. (temp. Lieut.-Col.) W. D. Beatty, R.E., from Chief Inspn., Aeronautical Inspn. Dept., and retain temp. rank whilst so employed, vice Maj. (temp. Lieut.-Col.) J. D. B. Fulton, C.B. (since deceased). November 13th.

Deputy Assistant Director.—Capt. E. R. L. Corballis, R. Dublin F., a Flight Com., Royal Flying Corps, vice Capt. G. M. Griffith, R.A. October 31st.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—December 1st: Temp. Lieut. V. Busby, Motor Cycl. Sect., R.E., S.R.; Sec. Lieut. C. E. H. James, Welsh, and seconded; Temp. Sec. Lieut. J. R. Allan, Gen. List; Sec. Lieut. N. G. McNaughton, S.R.; Sec. Lieut. D. Joy, S.R., Sec. Lieut. R. F. S. Morton, S.R.

Aeronautical Inspn. Dept.: Chief Inspns.—Bt. Maj. W. D. Beatty, R.E., from D.A.Q.M.G., and to be temp. Lieut.-Col. whilst so employed, vice Maj. (temp. Lieut.-Col.) J. D. B. Fulton, C.B. (since deceased). October 31st. Capt. R. K. Bagnall-Wild, R. of O., from Inspn. of Engines, and to be temp. Lieut.-Col. whilst so employed, vice Bt. Maj. (temp. Lieut.-Col.) W. D. Beatty. November 13th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: N. G. McNaughton, D. Joy, R. F. S. Morton, G. McKerrrow. To be Sec. Lieuts. (on prob.): C. T. Inman. November 15th. J. Brown. November 30th.

* * *

From the "London Gazette," December 21st, 1915.

WAR OFFICE, December 21st.

REGULAR FORCES.—MEMORANDA.—Josiah C. Wedgwood, D.S.O., temp. comm. R.N.V.R., to be temp. Maj. December 1st.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. confirmed in rank: F. E. Goodrich, R. A. Courtney, H. J. C. Smith, N. S. Percival, T. L. F. Burnett, H. L. Conner, C. G. Smith, A. W. Cott, W. J. Hewitt, E. W. Havers, W. T. W. Warnaby. To be Sec. Lieuts. (on prob.): J. N. Mearns. November 22nd. J. C. Cunningham. November 8th. L. J. Stuart. December 8th.

TERRITORIAL FORCE.—HAMPSHIRE AIRCRAFT PARKS, ROYAL FLYING CORPS.—S. H. Smith, to be Maj. (temp.) December 1st. To be Capt. (temp.) December 1st: F. M. Green, C. K. B. Stoney, G. B. Turner, K. Lucas. To be Lieuts. (temp.) December 1st: R. Whiddington, R. M. Maxwell.

* * *

From the "London Gazette" Supplement, December 22nd, 1915.

WAR OFFICE, December 22nd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: C. E. Holloway, M. A. Shepstone. Lieuts., Can. Mil., to be Sec. Lieuts. (on prob.) November 20th: J. H. Ross, C. R. Duggan, W. R. C. Dacosta, F. H. Whiteman, J. H. Firstbrook, A. M. Thomas, H. A. Wood, J. E. Rettie, W. W. Lang, L. C. Boyd, R. H. Croyn, J. S. Beatty, J. C. Simpson.

To be Sec. Lieuts. (on prob.): A. H. O'H. Wood. November 7th. November 20th: E. G. Ryckman, M. M. Mowat, A. G. Knight, R. T. Griffin, G. L. Faulkner, D. Cushing, H. G. Smith.

* * *

From the "London Gazette" Supplement, December 23rd, 1915.

WAR OFFICE, December 23rd.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be Sec. Lieuts. (on prob.) November 17th: H. Jones, G. J. Williams, C. S. Duffas, J. W. Bailey. November 22nd. H. Levy. December 13th. J. W. Jardine to be Sec. Lieut. (on prob.) November 22nd.

* * *

A Supplement to the "London Gazette" issued on December 23rd contains the following announcement:—

THE VICTORIA CROSS.

His Majesty the King has been graciously pleased to award the Victoria Cross to the undermentioned officer:—

Second Lieutenant GILBERT STUART MARTIN INSALL, No. 11 Squadron Royal Flying Corps.

For most conspicuous bravery, skill, and determination, on November 7th, 1915, in France. He was patrolling in a Vickers Fighting Machine, with First-Class Air Mechanic T. H. Donald as gunner, when a German machine was sighted, pursued, and attacked near Achiet. The German pilot led the Vickers machine over a rocket battery, but with great skill Lieut. Insall dived and got to close range, when Donald fired a drum of cartridges into the German machine, stopping its engine. The German pilot then dived through a cloud, followed by Lieut. Insall. Fire was again opened, the German machine was brought down heavily in a ploughed field four miles south-east of Arras. On seeing the Germans scramble out of their machine and prepare to fire, Lieut. Insall dived to 500 ft., thus enabling Donald to open heavy fire on them. The Germans then fled, one helping the other, who was apparently wounded. Other Germans then commenced heavy fire, but in spite of this Lieut. Insall turned again, and an incendiary bomb was dropped on the German machine, which was last seen wreathed in smoke. Lieut. Insall then headed west in order to get back over the German trenches, but as he was at only 2,000 ft. altitude he dived across them for greater speed, Donald firing into the trenches as he passed over. The German fire, however, damaged the petrol tank, and, with great coolness, Lieut. Insall landed under cover of a wood 300 yards inside our lines. The Germans fired some 150 shells at our machine on the ground, but without causing material damage. Much damage had, however, been caused by rifle fire, but during the night it was repaired behind screened lights, and at dawn Lieut. Insall flew his machine home with First-Class Air Mechanic T. H. Donald as a passenger.

[A very good performance and one which evidently forms the climax of a series of gallant actions by the same officer, for this feat by itself is hardly of the nature usually necessary to qualify for a V.C., judging by the number of equally brave actions which have gone entirely unrewarded, even when described in official or semi-official dispatches. One hopes to see the name of T. H. Donald, A.M.I., in the honours list also, for the bravery and nerve of the man who used his machine-gun with such effect under such circumstance is quite as great as that of the pilot who took him into action. The air mechanic's nerve is proved by his flying back in the machine after it had been repaired. Many a man might have gone through the first part of the performance on sheer excitement and then have had enough for a while.—Ed.]

* * *

From the "London Gazette," December 24th, 1915.

WAR OFFICE, December 24th.

MEMORANDA.—T. F. G. Strubell to be temp. Sec. Lieut. for duty with Royal Flying Corps. November 9th.

Sgt. F. M. Ballard, Royal Flying Corps. November 30th. First Class Air Mechanic J. D. Drysdale, Royal Flying Corps. December 5th.

NAVAL.

The following appointments were notified at the Admiralty on December 20th:—

Acting Sub-Lieutenant A. L. White, to "President," additional, for R.N.A.S., December 23rd.

ROYAL NAVAL AIR SERVICE.—The following have been granted temp. commissions as Sub-Lieuts. (R.N.V.R.), all with seniority December 19th, and appointed to the "President," additional, for R.N.A.S., to date December 20th: A. T. Barker, L. V. Pearkes, C. N. Downes, W. M. Miller, and J. Hodson.

* * *

The following appointments were notified at the Admiralty on December 21st:—

ROYAL NAVAL AIR SERVICE.—Mr. W. E. Dommett, entered as temp. Lieut., R.N.V.R., with seniority December 15th, and appointed to the "President," additional, for R.N.A.S.

C. J. Pyke, promoted to prob. Flight Sub-Lieut., temp., and appointed to the "President," additional, for R.N.A.S., to date December 20th.

Mr. J. de Francia entered as prob. Flight Sub-Lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date December 20th:—

Mr. A. J. Collins, entered as temp. Warrt. Officer, second grade, and appointed to the "President," additional, to date December 20th.

* * *

The following appointments were notified at the Admiralty on December 22nd:—

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ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as temp. Lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as mentioned: G. Caird, December 21st; G. C. Rhodes, December 21st; F. Reynolds, and H. W. Radcliffe, December 28th.

Temp. Sub-Lieut. R.N.V.R., J. P. Eldsen promoted to temp. Lieut., and appointed to the "President," additional, for R.N.A.S., to date December 20th.

Actg. Sub-Lieut., R.N.R., A. Durston transferred to the R.N.A.S. as temp. proby. Flight Sub-Lieut., and appointed to the "President," additional, to date December 21st.

Messrs. H. G. Travers and L. A. Rees entered as proby. Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date December 21st.

Chief Petty Officer W. A. Kingston promoted to the rank of temp. Warrant Officer, sec. grade, and appointed to the "President," additional, for R.N.A.S., to date December 21st.

Mr. A. H. Davies entered as temp. Warrant Officer, sec. grade, with seniority November 21st, and appointed to the "President," additional, for R.N.A.S., to date December 28th.

* * *

The following appointments were notified at the Admiralty on December 27th:—

ROYAL NAVAL AIR SERVICE.—Mr. C. J. H. Trutch granted a temp. commission as Sub-Lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date December 23rd.

The following have been entered as proby. Flight Sub-Lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., all to date December 24th: S. Burton, A. H. H. Gilligan, S. S. Benson, J. A. Yonge, P. E. Bayley, and L. A. Jones:

* * *

The Secretary of the Admiralty announced the following casualty on December 21st:—

SLIGHTLY INJURED.

(Under date December 20th.)

Flight Sub-Lieut. Erith W. Carlton-Williams, R.N.

* * *

The Secretary of the Admiralty announced the following casualty on December 25th:—

MISSING.

(Under date December 20th.)

Flight Sub-Lieut. Frank Besson, R.N.

[See Turkish communiqué of December 21st.—Ed.]

* * *

In connection with the promotion of Capt. Godfrey Paine, C.B., M.V.O., R.N., to be Commodore, 1st Class, the following note is of interest:—

"Captain Godfrey Marshall Paine, C.B., M.V.O., has the rank of Commodore, 1st Class, with seniority of December 10th. He commanded the 'Renown,' on which ship the King and Queen (then Prince and Princess of Wales) made their journey to India in October, 1905. He was appointed captain of the 'Actæon,' torpedo-schoolship and headquarters of the 'Naval Wing,' Royal Flying Corps, in August, 1911. In May of 1912 he took his Royal Aero Club aviator's certificate and in the same month was appointed Commandant of the Central Flying School at Upavon."

[It is understood that Commodore Paine will command a new Naval Flying School, which is to be organised on a very big scale, and that all connection between the R.N.A.S. and R.F.C. henceforth ceases.—Ed.]

* * *

With reference to a letter quoted in THE AEROPLANE recently from a Canadian paper and written by a Major Bell of the Canadian Contingent, describing a raid made by Flight-Sub-Lieut. R. H. Mulock, R.N., on the Zeppelin sheds at Brussels, it is now understood that Sub-Lieut. Mulock is entirely unacquainted with the said Major Bell and that he is at a loss to imagine where he got his information regarding the flight, as his account is entirely fanciful and inaccurate.

Flight Sub-Lieut. Mulock wishes it to be stated that he does not claim to have set the airship sheds on fire, nor does he consider that the trip was anything out of the ordinary, as one would be led to imagine from the fanciful and exaggerated account written by Major Bell.

The following appeared in the marriage columns on December 24th:—

TOMKINSON—TURNER.—On December 18th, at St. Mary's Church, Bentley, Flight Commander Lancelot Tomkinson, R.N., youngest son of Mr. and Mrs. Frederick Tomkinson, of Silvertown Lodge, Upper Norwood, to Doris Gosnall, fourth daughter of Mr. and Mrs. Hugh Turner, of Bentley, Suffolk.

[Flight Comm. Tomkinson has commanded various air stations on the East Coast since the outbreak of war, and has distinguished himself by his keenness and energy. All will wish him and his bride every good fortune.]

MILITARY.

The following passage in a telegraphic dispatch received from General Headquarters in France, dated December 20th, 1915, 9.3 p.m., refers to aircraft:—

There was yesterday considerable activity on the part of the enemy's aeroplanes, which attempted to prevent our reconnaissance machines carrying out their work.

These attempts were unsuccessful.

During the day there were forty-four combats in the air. Two of the enemy's aeroplanes were brought down behind their lines and others were driven down apparently in a damaged condition. One of our machines is missing.

[This intense activity appears to cover big movements of enemy troops. Rumours from Holland, such as have preceded all previous attacks on a large scale, also point to such movements. If, therefore, the big attack has not already been delivered by the time these notes appear, it seems very probable that it will be due in a day or two. The other presumption is that the enemy expects an attack from the Allies and is moving in supports in large numbers.—Ed.]

* * *

The following casualties in the Expeditionary Force were reported on December 21st from G.H.Q. under date December 15th:—

MISSING.

Insall, Sec. Lieut. G. S. M., Royal Flying Corps.

CANADIAN CONTINGENT.

Previously unofficially, now officially, reported Prisoner of War.

Leeson, Lieut. D., 7th Infantry (British Columbia Regt.), attd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on December 22nd under date December 16th:—

MISSING.

Hobbs, Sec. Lieut. A. V., Royal Flying Corps.

Tudor-Jones, Sec. Lieut. C. E. T., East Lancashire, attd. Royal Flying Corps.

Reported on December 22nd without date:—

KILLED.

Kelway-Bamber, Sec. Lieut. C. H., Royal Flying Corps.

Previously officially reported Missing, now unofficially reported Wounded and Prisoner of War.

Harvey, Lieut. W. A., 4th Norfolk (T.F.), attd. Royal Flying Corps.

* * *

The following appeared in the casualty list published on December 23rd:—

Previously officially reported Missing, now unofficially reported Wounded and Prisoner of War.

Ward, Sec. Lieut. H. S., Royal Flying Corps.

Previously officially reported Missing, now unofficially reported Prisoner of War.

Buckley, Lieut. S. E., 5th Northamptonshire, attd. Royal Flying Corps.

* * *

The following appeared in the casualty list published on December 23rd, and dated December 13th:—

WOUNDED.

R.F.C.—Dewberry, 359, Sgt. J.; O'Giollagain, 166, Cpl. J.



THE GREAT WAR



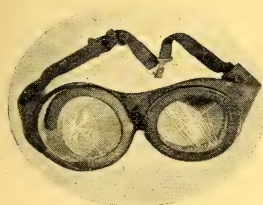
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The following appeared in the casualty list published on December 27th :—

Previously reported Missing, now reported Prisoner of War.

Brown, Sec. Lieut. A. W., 3rd Manchester, attd. Royal Flying Corps.

* * *

The following casualties in the Expeditionary Force were reported on December 28th under various dates :—

DIED OF WOUNDS.

Russell, Lieut. P. C. S., 5th Cameronians (Scottish Rifles) (T.F.) and Royal Flying Corps.

Lieut. P. C. S. Russell, 5th Battalion the Cameronians, received his commission in October, 1914, and was promoted temporary lieutenant in July of this year.

WOUNDED.

Bell-Irving, Capt. M. McB., Royal Flying Corps.

Fairbairn, Lieut. C. O., Royal Flying Corps.

Thomas, Lieut. M. W., R.F.A., attd. Royal Flying Corps.

MISSING.

Smith, Sec. Lieut. N. G., Highland L.I. and Royal Flying Corps.

* * *

The following appeared in the marriage columns on December 23rd :—

KELLY—ADAMS.—On December 14th, at St. Cyr Church, Stinchcombe, Gloucestershire, by the Rev. Dr. Reynell Reynell, rector, Captain John Upton Kelly, Royal Flying Corps, son of Richard Kelly, Summerhill, Enniskerry, County Wicklow, to Eileen Miriam, daughter of the late Henry Adams, of Cannon Hill, Bray, Berks, and of Mrs. Henry Adams, Stinchcombe Manor, Gloucestershire.

READ—DOLPHIN.—On December 22nd, at St. Jude's, Kensington, Geoffrey Jervis Read, Royal Flying Corps, second son of Mr. and Mrs. J. Read, of Brentwood, to Helen Joy, only daughter of Commander Dolphin, R.N., and Mrs. Dolphin, of Mainsail Haul, Sheringham.

* * *

The appointments and promotions in the Department of Military Aeronautics notified in the "Gazette" of December 20th are of unusual interest. Colonel Brancker, R.A., who, as Deputy Director of Military Aeronautics, did such highly valuable work at the War Office during the most difficult period of the early part of the war, is now commanding a Wing abroad. He is succeeded by Colonel MacInnes, a very able Sapper officer, who was an Assistant Director to Colonel Brancker.

The latter officer's post as A.D.M.A. is filled by Lieut.-Col. W. D. Beatty, another Sapper officer, who has distinguished himself on active service, and has had as much experience of flying as any officer in the Service, having taken his certificate on a little 35-h.p. Avro in the dark ages of 1911, and having flown regularly ever since. As a practical aviator, as an engineer, as an organiser, and as an administrator, Colonel Beatty has proved his ability, and his appointment should produce excellent results.

The post of Chief Inspector, A.I.D., is filled by Lieut.-Col. Bagnall-Wild, another Sapper officer, who has been Inspector of Engines ever since the A.I.D. was formed, and has done much work of permanent worth to the Service. Prior to joining the A.I.D., Colonel Bagnall-Wild specialised on motor traction, and therefore started with an intimate knowledge of internal combustion engines.

The majority of the moves mentioned above have been caused by the lamented death of Lieut.-Col. J. D. B. Fulton, C.B., R.A., a few days after his appointment to be A.D.M.A., in succession to Col. MacInnes. Lieut.-Col. Beatty, who had just been appointed to succeed him as Chief Inspector A.I.D., was moved up to A.D.M.A., and Lieut.-Col. Bagnall-Wild succeeds to Chief Inspector—Mr. G. B. Cockburn, Inspector of Aeroplanes A.I.D., being still a civilian, is presumably ineligible for Chief Inspector in any case, but apparently the respective

seniority of the Inspectors of Aeroplanes and of Engines A.I.D. is not a fixed quantity.

The new appointments are all in highly capable hands, and the Department of Military Aeronautics will, one feels sure, continue to be as efficient as ever. Nevertheless, those who remember the very early days of the R.F.C. cannot fail to notice the curious stroke of fate which ordains that the whole hierarchy of the matériel side of the R.F.C. should be Sapper officers, after all the struggles in the beginning to separate the R.F.C. from the Sappers. The reply is that there are Sappers and Sappers, and that an R.E. officer of the right kind, separated from his own corps and dealing with matériel, is the best possible man for the job. And, moreover, the R.F.C. owes much to the ingenuity and gallantry of many young Sapper officers on active service.

* * *

Mr. Prevost Battersby, writing in the "Morning Post" of the fighting on December 19th, says :—

"The fight on Sunday was carried on with far greater vigour in the air; it became, indeed, one of the most noticeable that we have yet seen. Close upon thirty duels were fought between planes, and not one of these terminated in the enemy's favour. Seventeen of them were carried to a decisive issue, ending either in the flight of the German plane or in its being driven to earth; three hurried descents being made to escape destruction, and in one case the enemy fell flaming to the ground. None of our machines failed to report itself at the close of the day, but there were few which had come entirely unscathed out of the day's fighting."

[Young officers of the R.F.C. who are attacked by a German or attack a German, and see him land abruptly after a short scrap, should not jump to the conclusion that he is defeated, and proceed to write home about it. A friend of the writer's in France says that captured German single-seaters indicate that they carry only a single belt of cartridges for their machine-gun, and do not reload in the air, as the Allies' pilots do with Hotchkiss clips and Lewis drums. Consequently as soon as his belt is expended down goes the German—generally in a nose-dive—for a reload. Which is not exactly the same as driving him to earth.—Ed.]

FRANCE.

The communiqué of December 20th says :—

This morning four of our bombing aeroplanes, escorted by seven machines armed with machine-guns, dropped upon the goods station at Mulhausen six 155-millimètre and twenty 90-millimètre bombs. All the bombs struck their objective.

* * *

According to the Paris "Matin," an aeroplane manned by two non-commissioned officers, Féquant and Fauque, capsized at Tourouvre (Eure et Loire). Fauque succumbed.

GERMANY.

The communiqué of December 20th says :—

One of our air squadrons attacked Poperinghe, where numerous enemy communication lines converge.

A British biplane was shot down near Bruges in an air battle; the crew was killed.

[This presumably refers to 2nd Lt. N. G. Smith, mentioned in the casualty list of December 28th.—Ed.]

* * *

Under the title of "The Aerial Battle of the Mar-graviat" the Geneva newspapers give the following version of the French air raid on Mülheim (see French and German communiqués of Dec. 14th and 15th) :—

The twelve Avions replied vigorously to the eight enemy machines which attacked them. One French biplane with two motors and mitrailleuses, a Blériot, was brought down, and fell in a field between the Mülheim station and the outlying houses of Neuen-

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burg. Both of her crew were killed, and fire destroyed the apparatus itself. [The machine referred to was probably a Caudron built by the Blériot Co.—Ed.]

Farther south, between Neuenburg and Steinstadt, another machine was put *hors de combat*, and the aviators, who tried in vain to set it alight, were made prisoners by the enemy soldiery.

Two other machines came down in the Hard Forest and were captured with their occupants. The French had, however, succeeded in dropping twenty big bombs on the railway station of Mülheim and the line connecting it with Mülhaus, Freiburg (in Baden), and Basle.—T. S. H.

* * *

Lugano is responsible for the statement that the Supreme Court at Leipzig has sentenced Capt. Otto Wiener, manager of the Johannisthal Albatros Works, and an Austrian, to eighteen months' confinement in a fortress because in 1914 he sold (and presumably delivered) to the Italian Naval authorities three seaplanes fitted with wireless of the type reserved for the German Navy.—T. S. H.

[This is about the third time Herr Wiener—who will be remembered at Hendon and Brooklands—has been either shot or imprisoned.—Ed.]

RUSSIA.

The communiqué of December 22nd says:—

In the region of Riga our artillery successfully cannonaded German aeroplanes and captive balloons.

Our aviators again dropped bombs on enemy trains travelling towards Swenziany.

* * *

The Petersburg correspondent of the "Morning Post," in a message published on December 28th, says:—

"As I pointed out some while ago, the intense cold has told seriously upon the German scouting service. For a long time the Germans in Russia have relied upon their double-nationality spies resident in the country, with whom communications were kept up as a last resort by aeroplanes. Nowadays the Russians make a clean sweep of untrustworthy persons within the zone of military operations, and German aeroplanes cannot safely continue

their expeditions. The cold rapidly increases with every few yards of altitude, and as aeroplanes rush swiftly, through air at a temperature from fifty to seventy degrees below Fahrenheit freezing point no known methods will keep the pilot and observer from death by cold. Therefore the German pilots now fly at much lower altitudes, and even then without always escaping the worst effects of the intense cold. The Russians now bring them down at the rate of several daily, chiefly with rifle shots.

"Captive balloon observation points fare little better, as they make admirable artillery marks in the clear, frosty air. One was brought down on the Dwinsk front by artillery, which continued to bombard the place where it fell, and before long a tremendous explosion took place. Evidently a shell exploded the stores of gas for the balloon."

[All these statements probably have a substratum of truth. "Several daily" is probably an exaggeration. And captive balloons are remarkably hard to hit. It is also unlikely that a shell on a few gas cylinders would cause a "tremendous" explosion.—Ed.]

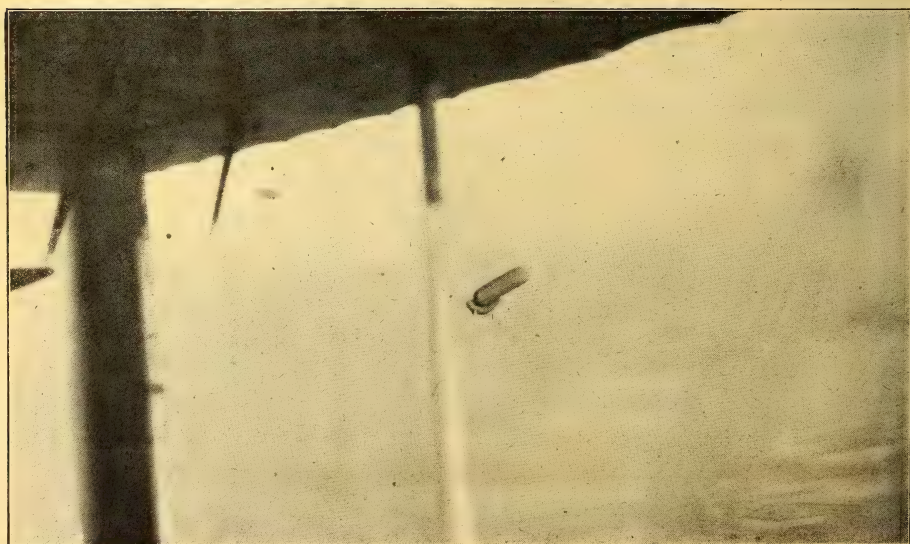
ITALY.

The outstanding features of this week's news are the mention of the use of darts by the Italians in the big raid which the official statement made public and the Ancona affair.

As a means of destruction the Italians—whose matter-of-fact and business qualities have been so curiously overlooked by both their friends and their foes—clearly fail to appreciate why the vertical path of the arrow should be vile. And are they not less unhealthy altogether than bombs, and more useful afterwards?

At Ancona the Austro-Germans, who arrived about lunch-time luckily, launched bombs only. Four seaplanes composed the raiding force, two single-deckers and two, of course, biplanes, and the station and level crossings were, it is presumed, the objects they came to destroy. All of which escaped being damaged. Fatalities and injured numbered twelve in all.

Though not bombing Trieste, Allied aviators are frequently over the city. Perhaps not altogether unin-



OVER THE ENEMY'S LINES.—A German kite-balloon seen from a French Maurice Farman in Eastern France.

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tentionally many civilian victims have been made by the frantic efforts of the A.-A. men to hit something flying. It is not probable that either good marksmen or good guns could be spared for the city at this stage of the Italian offensive.

One would very willingly have been spared at this season the mention of any further loss of life, but man proposes, etc. Taliedo was the scene of a double fatality on the 13th inst., when a military pilot and a gunner fell from a height variously estimated, when flying a biplane, and were killed outright. A wing is said to have given way.

Busto, too, had its troubles that week-end—a smash and a propeller accident—the latter a serious casualty, and one which should be impossible, and will be when flying ceases to be a sport and the business man has his say about self-starters. One hopes in the absence of news that the injured may both have pulled round.

Surely the Italian communiqué of 15th inst. has been strangely mistranslated? Should it not read, "Our intrepid aviators having come down *under* the fire (i.e., lower than the angle of fire) of the A.A. batteries, then turned their quick-firing guns onto the enemy's encampments," etc., etc.? The shade of difference in the meaning is enlightening.

Majors Dal Fabbro and Mini have been promoted to the rank of lieutenant-colonel. The former is, of course, known to everybody interested in the world's progress. The latter has earned the gratitude of Venetians particularly, being responsible for the A.A.C. there.

Among the names of other distinguished officers of high rank mentioned in the Military Bulletin in connection with the various commands in the Aeronautical Corps and moves in the same one notes that of Major Prandoni, C.O. of the famous biplane escadrille which did so much good work in the revival of the two-decker military 'bus in Italy.—T. S. H.

MONTENEGRO.

The communiqué of December 24th says:—

Two enemy aeroplanes, one of them being German, dropped four bombs on Scutari on December 23rd. Five civilians were killed and 16 women and children injured.

TURKEY.

The communiqué of December 20th, describing the withdrawal of British troops from the Gallipoli Peninsula, says:—

We shot down an enemy aeroplane, which fell into the sea, and took the pilot and observer prisoners.

[There is nothing to show whether the reference is to a French or British aeroplane. The assumption is that it pertained to the force making the great attack from Cape Helles to cover the escape of the Anzac and Anafarta forces.—Ed.]

The communiqué of December 27th says:—

Near Morto Liman on December 25th one of our sea-planes made successful reconnoitring flights over the Island of Tenedos and the enemy's positions near Sedd-el-Bahr and hit with a bomb a torpedo-boat south of Sedd-el-Bahr.

GREECE.

A report from Salonica states that a reconnaissance carried out by aeroplanes verified the fact that everything was quiet on the enemy's front, and that there was no movement of troops.

SWEDEN.

A correspondent of the "Social Demokraten" (Stockholm, December 23rd) telegraphs from Halmstad that a

Zeppelin was sighted there on December 22nd. It was seen above the entrance to the port, and afterwards travelled southwards. It was apparently watching the American barque "Andrew Welsh" at Halmstad, which the Germans are evidently desirous of capturing. The guard of the vessel has been further increased.

BELGIUM.

The "Morning Post" correspondent at Amsterdam wired on December 27th:—

"Allied aviators dropped bombs on Bruges on Christmas Day. They also appeared above Ghent, and, notwithstanding a heavy fire from the enemy, they escaped unhurt."

INDIA.

The subscription in the Punjab to provide seven aeroplanes named after the big rivers in the province is making excellent progress. All the districts of Northern India are subscribing freely to the funds. The fleet will be primarily utilised in areas where Indian troops are engaged, and after the war will be placed at the disposal of the Commander-in-Chief.

IN THE HOUSE.

Mr. TENNANT informed Mr. King in the House of Commons on December 21st that the Anti-Aircraft (London) Corps had not yet passed under the control of the War Office. The gunnery portion of the defences was still under the Admiralty, and presumably Admiral Sir Percy Scott was still in power.

ALTITUDE SICKNESS.

The following letter has been received:—

Sir,—In connection with your notes in the issue of December 15th on "flying sickness," it may interest your readers to know that, chatting in years past with the drivers and guards of the mountain railway which connects Darjiling (about 7,000 feet) with Siliguri (about 60 to 80 feet above sea level) they have told me that what they felt most was the change of altitude.

In their case the journey of some 50 miles is spread over 8 to 10 hours, and the difference of pressure is about 5 inches. I have heard the same tale from planters in those districts who have to range in the course of the day over a tea garden running in some cases from 5,000 or 6,000 feet down to 1,000 feet.

For myself, the only attack of mountain sickness I ever had, though I have climbed in many hills in Europe and in the Old and New Worlds, was one night at the foot of the Jelap La Pass in Thibet. I attributed it to the fact that we had climbed the previous day from Sedonchen (about 6,000 feet) to the "Roof of the World" at Gnatong (about 12,000 feet) in a couple of hours or so. I enclose my card.

AN INTERESTED READER AND SUBSCRIBER TO
"THE AEROPLANE."

FOR YOUNG READERS.

The Royal Colonial Institute has arranged three illustrated Christmas lectures for the first week in January, to be given at the Whitehall Rooms, Hôtel Métropole, Charing Cross.

The first, on January 3rd, is by the Rev. Dr. C. W. Gordon on "Canada and the New Empire." Dr. Gordon is perhaps better known in this country by his pen-name of "Ralph Connor." The second lecture, on January 5th, is on "The Wonders of the Antipodes," by Mr. W. H. Garrison, the official lecturer of the institute.

On January 7th, Miss Gertrude Bacon will deliver the third lecture, her subject being "Flying Machines in Peace and War." Miss Bacon's lectures on aviation are invariably entertaining in matter and manner, and are remarkable for historical and technical accuracy, therefore one can cordially recommend those who can spare the time to go and hear this lecture in particular. It will be a well-spent afternoon.

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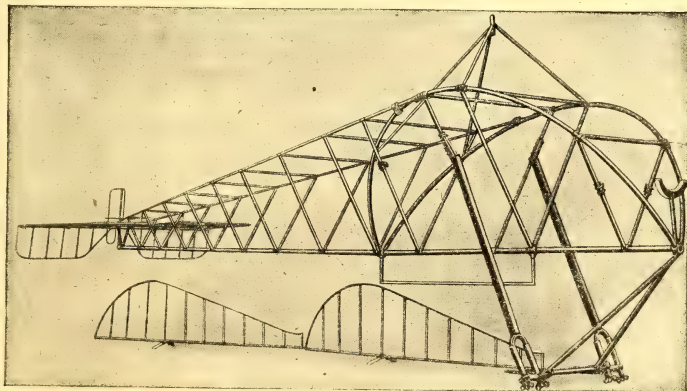
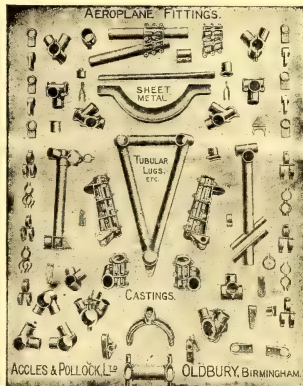
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Honours Won by the R.N.A.S. since the Beginning of the War.

The following extracts from the "London Gazette" and from Admiralty notifications place on record the honours and special promotions won by officers of the Royal Naval Air Service since the beginning of the war:—

From the "London Gazette" Supplement, October 22nd, 1914.

ADMIRALTY, October 21st, 1914.

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order of the undermentioned officers in recognition of their services mentioned in the foregoing dispatches:

To be Companions of the Distinguished Service Order.—Commander Charles Rumney Samson, Squadron-Commander Spenser Douglas Adair Grey, Flight Lieutenant Reginald Lennox George Marix, Lieutenant Charles Herbert Collet, Royal Marine Artillery.

[The dispatch in question related to the raids on Düsseldorf on September 22nd by Lieut. Collet, R.M.A., on Düsseldorf by Flight-Lieut. Marix on October 8th—when a Zeppelin was destroyed—on Cologne by Squadron-Comm. Spenser Grey—when the station was damaged; and to the skirmishes in Flanders under Commander Samson.]

The following appeared in the list of New Year's Honours in the "London Gazette" of December 31st:—

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order of the undermentioned officers:—

TO BE COMPANIONS.

Squadron Commander Edward Featherstone Briggs, Royal Naval Air Service.

Flight Commander John Tremayne Babington, Royal Naval Air Service.

Flight Lieutenant Sidney Vincent Sippe, Royal Naval Air Service.

[These were awarded for the raid on Friedrichshafen. These three officers also received the Legion of Honour.]

NAVAL PROMOTIONS.

The following promotions have been made:—

COMMANDERS TO BE CAPTAINS.

William Leslie Elder (now holding the acting rank of captain), Francis Rowland Scarlett (now holding the acting rank of captain).

LIEUTENANT-COMMANDER TO BE COMMANDER.

Frederic Lewis Maitland Boothby (now holding the acting rank of commander).

ROYAL NAVAL AIR SERVICE.

The following promotions have been made:—

Squadron Commanders to be Wing Commanders.—Eugene Louis Gerrard, Arthur Murray Longmore.

Flight Commanders to be Squadron Commanders.—Charles Edward Henry Rathborne, Douglas Austin Oliver, John Norman Fletcher, James Lindsay Travers, Thomas Reginald Cave-Brown-Cave.

Flight Lieutenants to be Flight Commanders.—Arnold John Miley, William Charles Hicks, Edward Osmond, William George Sitwell, Charles Robert Finch Noyes.

Flight Sub-Lieutenants to be Flight Lieutenants.—Philip Leslie Holmes, John Philip Wilson, James Douglas Maude, Ernest Victor Samuel Wilberforce, Evelyn Ronald Whitehouse, Harry Stewart, Anthony Rex Arnold, Denys George Murray, Norman Sholto Douglas, George Bentley Dacre, Ralph James Jean Hope-Vere, Bernard Crossley-Meates, Walter Hugh Stewart Garnett, Ralph Whitehead, Harold Rosher, the Honourable Desmond O'Brien, Edward Gordon Riggall, Gordon Lindsay Thomson, Irving Henry Betty Hartford.

Flight Sub-Lieutenants for Temporary Service to be

Flight Lieutenants for Temporary Service.—Vivian Gaskell Blackburn, Harold Austin Buss, George Cyril Colmore, Allan Knighton Robertson. All dated December 31st, 1914.

* * *

From the "London Gazette" Supplement, February 18th, 1915.

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order:—

To be Companions of the Distinguished Service Order:—

Captain Cecil Francis Kilner, R.M.L.I. (Flight Commander).

Lieutenant Charles Humphrey Kingsman Edmonds, R.N. (Flight Lieutenant).

The following awards have also been made:—

To receive the Distinguished Service Medal:—

Chief Petty Officer Mechanic James William Bell, No. M.489.

Chief Petty Officer Mechanic Gilbert Howard William Budds, No. 271764.

[These were awarded by lot for the raid on Cuxhaven on Christmas Day.]

* * *

February 24th, 1915.

Captain Murray F. Sueter, C.B., R.N., to be Commandore 2nd Class.

* * *

From the "London Gazette" Supplement, April 10th, 1915.

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order in recognition of services as mentioned:—

COMPANIONS OF THE DISTINGUISHED SERVICE ORDER.

For services rendered in the aerial attack on Dunkirk, January 23rd, 1915:—

Squadron Commander Richard Bell Davies.

Flight Lieutenant Richard Edmund Charles Peirse.

[These officers repeatedly attacked the German submarine station at Ostend and Zeebrugge, in particular on January 23rd, they each discharged eight bombs in an attack upon submarines alongside the mole at Zeebrugge, flying down to close range. At the outset of this flight Lieutenant Davies was severely wounded, but handled his machine for an hour with great skill in spite of pain and loss of blood.]

* * *

The Secretary of the Admiralty made the following announcement on June 8th:—

H.M. the King has sent the following telegram to Flight Sub-Lieutenant Warneford:—

"I most heartily congratulate you upon your splendid achievement of yesterday, in which you, single-handed, destroyed an enemy Zeppelin.

"I have much pleasure in conferring upon you the Victoria Cross for this gallant act.—GEORGE R.I."

From the "London Gazette," June 22nd, 1915.

The King has been graciously pleased to give orders for the award of the Distinguished Service Cross to Flight Lieutenant John Philip Wilson, R.N., and Flight Sub-Lieutenant John Stanley Mills, R.N., for their services on June 7th, 1915, when, after a long flight in the darkness over hostile territory, they threw bombs on the Zeppelin shed at St. Evère, near Brussels, and destroyed a Zeppelin which was inside.

* * *

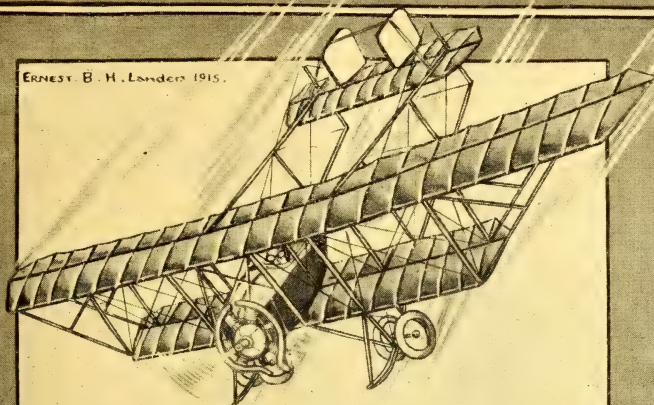
From the "London Gazette," August 16th, 1915.

To receive the Conspicuous Gallantry Medal.

Petty Officer Mechanic John Hepburn Russell, R.N. Air Service O.N. F.839.

Petty Officer Mechanic Geoffrey Charlton Paine Rumming, R.N. Air Service O.N. F.813.

ERNEST B. H. Lander 1915.



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These facts speak for themselves, and need no comment. It is hardly necessary to add that, if you wish to learn to fly, you should join THE BEATTY SCHOOL OF FLYING. Write for full particulars to the Secretary.

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Petty Officer John Hepburn Russell, O.N. F.839, of the Royal Naval Air Service, was wounded in gallantly going to Commander Unwin's assistance.

Petty Officer Mechanic Geoffrey Charlton Paine Rumming, O.N. F.813, Royal Naval Air Service, assisted Commander Unwin in rescuing wounded men.

The following Officers were Commended for service in Action between February 19th and April 24th:—

Flight-Lieutenant (now Flight-Commander) Geoffrey Rhodes Bromet.

Flight-Lieutenant (now Flight-Commander) Ronald Hargrave Kershaw.

[These were notified in the dispatch which Vice-Admiral de Robeck, Commanding the Eastern Mediterranean Fleet, forwarded to the Admiralty, reporting the landing of the Army on the Gallipoli Peninsula on April 25th-26th.]

From the "London Gazette" Supplement, September 12th.

DISTINGUISHED SERVICE ORDER.

Squadron-Commander Arthur Wellesley Bigsworth, R.N.

[For his services in destroying single-handed a German submarine on the morning of August 26th, 1915, by bombs dropped from an aeroplane.]

From the "London Gazette" Supplement, November 19th, 1915.

DISTINGUISHED SERVICE ORDER.

Flight-Lieutenant George Bentley Dacre, R.N.

[For his services in the Dardanelles, when he flew over the Gallipoli Peninsula, carrying out a difficult operation.]

From the "London Gazette," November 26th, 1915.

DISTINGUISHED SERVICE ORDER.

Flight-Commander Joseph Ruscombe Wadham Smyth-Pigott, R.N.

[On the night of November 13th-14th Flight-Commander Smyth-Pigott volunteered to attack the railway bridge at Kuleli Burgas. He was able to locate the bridge by the moonlight shining on the river, and descended to within 300 ft. of it before releasing his bombs.]

From the "London Gazette," December 8th, 1915.

DISTINGUISHED SERVICE ORDER.

Squadron-Commander Robert Gordon, R.N.A.S. (Captain, temporary Major, R.M.).

[Was in command of the Air Squadron which assisted in destroying the "Königsberg" on July 11th. Was indefatigable in his work, and ran great risks in spotting and reconnoitring.]

Flight-Commander John Tulloch Cull, R.N.A.S. (Lieutenant, R.N.).

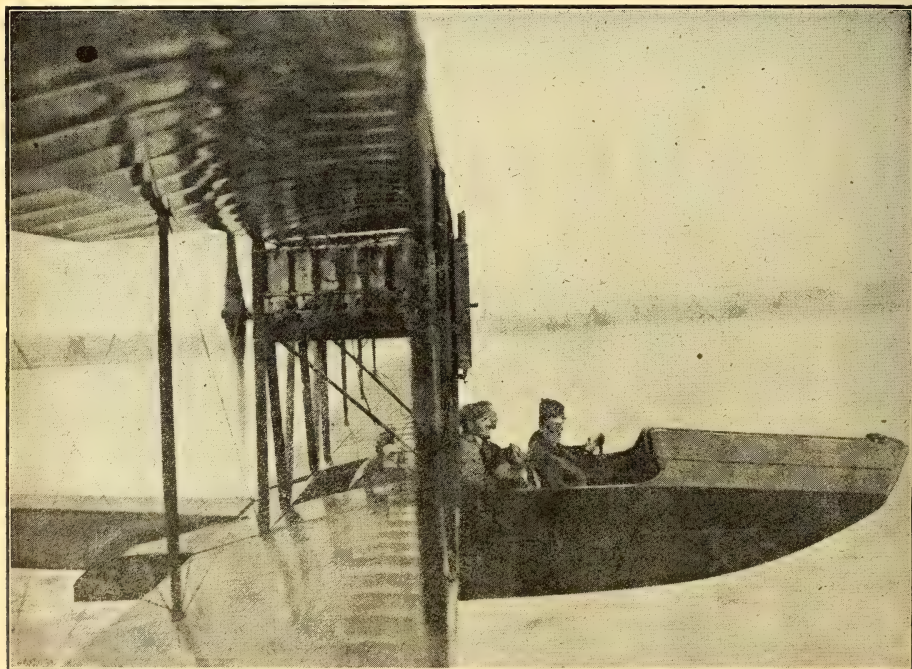
Flight Sub-Lieutenant Harwood James Arnold, R.N.A.S.

[Flight-Commander Cull and Flight Sub-Lieutenant Arnold were spotting on July 11th, under fire, in a biplane, when the enemy's fire damaged it. Flight Sub-Lieutenant Arnold continued to send his spotting signals the whole time, and when a quarter of an hour later the machine was again hit and forced to descend, Flight-Commander Cull controlled the machine and Flight Sub-Lieutenant Arnold continued to send spotting corrections to the last. The aeroplane finally came down in the river. Flight-Commander Cull was nearly drowned, but was assisted by Flight Sub-Lieutenant Arnold, and both were rescued by a boat from the "Mersey."]

The following rating has been awarded the Distinguished Service Medal for his services on the same occasion:—

Royal Naval Air Service.—Air Mechanic Ebenezer Henry Alexander Boggis, O.N. 14849.

[As passenger with Flight-Comm. Cull, photographed the "Königsberg" on April 25th from 700 ft., the engine of the machine being damaged.]



(Photograph by courtesy of "The Aerial Age," New York.)

The big twin-engined Benoist flying-boat with four on board, photographed from itself when well off the water.

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THE DEVELOPMENT OF THE SEAPLANE.

The centre pages of this issue illustrate in convenient form for reference the evolution of the seaplane from the earliest Blériot experiment to the period immediately before the war. The machines are shown roughly in chronological order, but chiefly in order of their historical importance.

No. 1 was a tractor biplane built somewhere in 1908 by M. Blériot and fitted with pontoons. This machine used to be towed on the water by the racing motor-boat "La Rapière" in the hopes that once off its engine would be sufficiently powerful to fly it. The hope was not justified.

No. 2 was the first Curtiss water machine, and the first aeroplane to fly off water. Its first flight was in January, 1911. This was very much on the lines of the 1909 Curtiss Gordon-Bennett machine. The front elevator, which apparently was intended to act also as a water-damper, should be noted.

No. 3, the Fabre monoplane, was like nothing built before or since, except the contemporary Fabre-Paulhan land biplane. It is chiefly notable for being the first water-machine to fly in Europe. It got off the waters of the Mediterranean and promptly fell in again.

No. 4, the Gnosspeliuss monoplane, was the first British waterplane with which experiments were seriously made. Short flights were made with this machine over Windermere in 1911. This is another machine of the single float variety.

No. 5, the twin-float tractor Avro with 35-h.p. Green engine, was used for experiments at Barrow-in-Furness by Commander Schwann, R.N. (now Captain R.N.A.S.). This machine, which was flown by Mr. Sippe (now Flt.-Comm. R.N.A.S.), was really the prototype of the hundreds of twin-float tractor seaplanes now in use. It was the first machine to fly off British seas.

No. 6 was the Voisin "canard." This somewhat singular machine evoked a good deal of derision when it was first produced, but, nevertheless, it did some quite sound flying both on the Seine and at Monaco. The particular machine illustrated was an amphibian, having wheels to permit it to alight on the ground, which it did quite successfully.

No. 7. This twin-float Short biplane was a converted land machine, and paved the way for many other of the Short productions, of which it was the ancestor.

No. 8, a single-float Short tractor, did an enormous amount of flying. The two small balancing floats on this machine naturally came into operation a great deal when the machine was travelling on the water, and eventually the single central float was discarded, as it made it impossible to manoeuvre on water at low speeds.

No. 9, a single-float Curtiss biplane, was built on the lines of the then existing Curtiss box-kite. A number of these machines were sold to the Russian and Japanese Navies, and did much hard service.

No. 10 was a Curtiss flying-boat with overhead engine. This was the pioneer of an entirely new class of seaplane. Machines of this type did a vast amount of flying in America on the rivers and great lakes, and quite a number were purchased both by private sportsmen in Europe and by the different Air Services.

No. 11, a 100-h.p. Gnome twin-float Avro biplane, was the first seaplane of this make to be really successful. This machine was purchased by the Imperial German Navy and was the first unit of the German aeroplane fleet to fly to Heligoland, a considerable time before the outbreak of war.

No. 12 was the 80-h.p. Borel seaplane. This machine was the first hydro-monoplane to attain any success, although its short radius of action and limited climbing capacity did not allow it to survive long. A large number of these were used in 1913 by the R.N.A.S. and were very valuable as training machines.

No. 13 was the Sopwith Green-engined "bat-boat," a flying-boat which attained very considerable success. It was awarded a prize offered by Mr. A. Mortimer Singer for the first all-British machine to make a series of starts and alightings alternately on land and water. It also was the first of a new class of seaplane which has not yet reached its full development.

No. 14 shows an amphibian Albatros "Taube" monoplane. This machine had a considerable measure of success, beating all competitors in the Italian Waterplane Competition, but it never distinguished itself as a seaplane. A clear distinction must be drawn between a "waterplane" for lake and river work and a seaplane for rough water.

No. 15 was the 200-h.p. Salmson Bréguet. This machine as an engineering job was one of the finest seaplanes ever built, but it, of course, had the inherent shortcomings of other Bréguets in its wing design. Flown by M. Moineau at Monaco it performed wonders in getting off and alighting safely on the most fearsome seas, and a full "mistral," with a wind-speed of 60 miles an hour.

No. 16 was the Sopwith tractor biplane fitted with Green engine on which Mr. Harry Hawker made his attempt to win the £5,000 "Daily Mail" prize for a seaplane flight round England, a flight which terminated on the Irish Coast owing to a side-slip in alighting.

No. 17 was a Caudron amphibian biplane with wheels let into the centre of the floats, offering the minimum of resistance in the air, but too much in the water to allow it to get off with full load.

No. 18 was the Nieuport monoplane. This machine, which is built with a perfectly rigid chassis, has done some very useful flying, particularly on active service with the French Navy. It is notable for the curious "ears" intended to prevent the floats from "nosing under" when alighting.

No. 19 was a Blériot water-monoplane, so constructed that it could be readily converted into a land machine by removing the floats and fitting wheels, the major portion of the chassis being equally suited to either purpose.

No. 20 was a small Morane monoplane on which M. Garros did much magnificent flying in the Monaco Meeting of 1913.

No. 21 was a Sopwith "tabloid" seaplane with 100-h.p. monosouape Gnome. On this machine Mr. Pixton acquired fame by winning the "Schneider Cup" at Monaco in 1914, when he defeated the leading French aviators. This was the first international coup acquired by any British aeroplane.

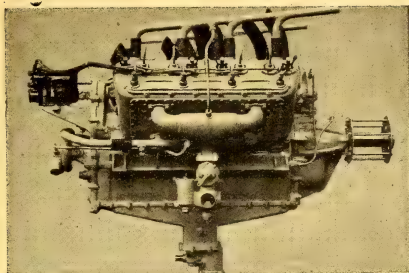
No. 22 was the Sopwith pusher biplane adopted largely by the Royal Greek Navy. This machine was fitted with a 100-h.p. Anzani.

No. 23 was the 160 h.p. Gnome pusher Short biplane to seat four, on which Mr. Horace Short, Mr. Alec Ogilvie and Mr. Frank McClean made a journey up the Nile to Khartoum.

No. 24 shows the Short tractor biplane, now a standard type, with folding wings which can be opened and closed from the passenger's seat. These machines are particularly useful for work with a fleet, as 5 machines can be stowed in a space occupied by one with its wings extended.

No. 25 shows the Zeppelin amphibian, built by the Friedrichshafen Aeroplane Co., a branch of the Zeppelin Airship Co. This machine attained considerable success in the German Lakes Competition.

No. 26 shows the standard 100-h.p. Gnome Henri Farman. This machine was contemporary with the Monaco "Rallye" of 1914. It was fitted with floats to which the chassis members were attached by a spring device so that alighting shocks are well absorbed.



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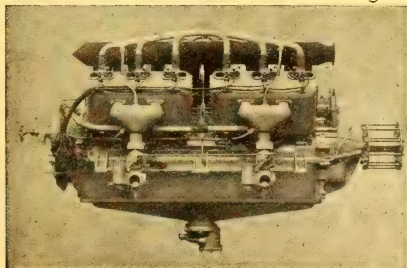
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No. 27 shows the Brandenburg tractor biplane, a standard seaplane on conventional German lines.

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No. 29 shows the twin-engined Curtiss flying-boat "America." This machine was designed for an attempt on a flight across the Atlantic, but the war put a stop to the preparations for the time being. It has been stated in the American Press that the machine was afterwards purchased by the British Navy, and has since done some excellent work over British waters as a school machine.

No. 30 was the Langley "Aerodrome." This machine was actually begun in 1898 and finished in 1903. It was dug out by Mr. Glenn H. Curtiss as practical evidence in a matter of litigation, fitted with floats and flown for the first time in 1914 to prove that a machine which was built

before 1900 was capable of flying if handled by an experienced pilot.

No. 31 was the 200-h.p. Salmson engined Wight pusher seaplane. The long skiff-shaped floats should be noted as they enable the machine to get off extremely choppy water.

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(Photographs by F. N. Birkett, Percy Road, Shepherd's Bush, W.)

A NEW DRAFT FOR THE R.N.A.S. FROM A NAVAL FLYING SCHOOL NEAR LONDON.—Top Row: Flight Sub-Lieuts. N. H. Hope, A. T. Sketchley, E. J. Bradley, A. A. Wallis, H. L. Hitch, and L. G. Scott. 2nd Row: E. P. Hicks, H. Humby, C. J. Galpin, G. Gardner, A. L. Greer, and K. Hopper. 3rd Row: F. H. Thoms, F. Halsey, P. S. J. Owen, Greig, W. Hocking, and A. E. Leek. Bottom Row: E. N. Lindeman, T. Knight, W. S. Wilson, J. Hallinan, H. Lether, and V. Bowater.

THE FLYING SERVICES.

BY ROGER BAYONS.

INTRODUCTORY.

It must be accepted as an axiom that the Royal Naval Air Service and the Royal Flying Corps will not be separated from their respective Services and be formed into one body under central control. Such a separate Air Service has apparently fascinations for a large number of those critics whose entire knowledge of military affairs has been gained during the present war. Even officers in the respective Services have been known to express similar views, but in such cases a love of piracy has most frequently been the inspiration.

In both Services certain conditions are similar in so far as flying is concerned. The air is the common element, and the aeroplane or dirigible balloon the common vehicle. But beyond these there are few similarities at all. Gunnery is in much the same position. Both Services have to employ guns of all categories in the execution of their duties. Yet there are none possessing military training who would argue that a common artillery Service would serve any purpose at all save to destroy the country foolish enough to give it birth. Ships' guns and shore guns differ in almost every conceivable way, both in form and use.

Naval gunnery depends largely for its success on the flatness of the trajectory of its guns and the colossal local effect of its shell. Land gunnery, on the other hand, is mainly concerned with indirect fire, and employs shell designed to be destructive over the largest possible area. The two branches of the same science are totally different. The parallel, which has been used before in this paper, obtains perfectly. As time drifts by, the types of aeroplanes used respectively by the Army and Navy will differ more and more. Their uses will be different, and consequently the training of the personnel will differ in the same degree. It is essential, if high efficiency be aimed at, that pilots as well as observers shall have adequate training in the art of war. Thus in the future the officers of the R.N.A.S. and of the Royal Flying Corps will tend to specialise in a manner which will prevent their working together with more success than now attends any joint efforts of the Army and Navy. There is no space in an article such as this to detail the many reasons why it is impossible to have any separate Service devoted to aerial work, and the axiom with which this paper is prefaced must be accepted without further argument.

In writing of the future of either Air Service at such a time as this it should be remembered that no detailed reference can be made to their respective organisations in the present, other than comments based on the paper states of those units as laid down immediately before the war. The war has, however, made but little change in the main features of the organisation of the Military Wing. Additions have been made, and the higher command expanded, but that is all. On the other hand, the Royal Naval Air Service is being organised for the first time, and there is little to be given away which would be the remotest use to the enemy.

THE ROYAL NAVAL AIR SERVICE.

The Royal Naval Air Service—which is still officially the Royal Flying Corps (Naval Wing)—is a flying arm formed for the purpose of assisting his Majesty's Fleet in the operations of war. In the original scheme which was brought into being by the Secretary of State for War after consultation with those responsible at the Admiralty the Naval Wing was to perform those duties which were strictly naval and also at times to render assistance to the Army when necessity arose.

A joint flying school was instituted on Salisbury Plain towards which the Navy contributed a portion of the

charges of erection and maintenance. A few months drifted by and the two sections of the Royal Flying Corps were as far apart in practice as they were allied in theory. The greater portion of the naval pilots were trained after a fashion at Eastchurch, and the number of pupils sent periodically to Upavon became less and less. The Navy and Army will never work together in consistent harmony until possibly the Millennium brings peace to all. A month before the outbreak of war the rift was made greater by the issue of a Memorandum by the First Lord of the Admiralty (at that time the Right Hon. W. L. Spencer-Churchill) naming the Naval Wing for naval purposes the Royal Naval Air Service and throwing over all but the merest shadow of cohesion between the two branches. Since then they have drifted farther apart than ever.

It is pure reason to admit that the increasing complications of flying in the two Services make it impossible for one man to acquire adequate knowledge of the principles of both, and that it is therefore wise to separate and to permit each to specialise in such a manner as to be of the greatest efficiency in those duties which are peculiar to each individual Service.

The Royal Naval Air Service is now in its earliest infancy and is at the present time in the process of organisation, from which in the course of the next few years it will emerge a useful and efficient arm of the great Service to which it has the honour to belong. The mistakes of its founders have not alone been responsible for the failure to act for the Navy as the R.F.C. has done for the Army. Special needs require special matériel as well as personnel, and in the R.N.A.S. the former has not developed at a sufficient speed to admit of the full theoretical use of the Flying Service at sea. In other words, the aeroplane operating over land has developed at a far greater rate than has the seaplane intended for sea-going work. Thus the Naval Air Service has been forced to become a pale copy of the R.F.C. in most fields of the war.

WHAT IS EXPECTED.

At this point it is perhaps well to outline the categories of work expected of the Royal Naval Air Service now and in the future if it is to justify its existence. The seaplane and the dirigible balloon should be in the future the types of aircraft most commonly in use in the Navy. In no other way can the major part of the duties be carried out with safety and certainty.

The main use of the seaplane, when efficiency has increased, is as a scouting agent attached to battle fleets at sea. The simplest calculation will prove to any that the use of aircraft would under normal conditions increase the vision of a fleet by many times the present range. A seaplane might have saved Admiral Cradock, and a seaplane would certainly have made the Battle of the Falkland Islands less unexpected to both fleets. The "Emden" would have terminated her gallant cruise long before she fought the "Sydney" if aircraft had been used. The "Goeben" and "Breslau" might have been at rest beneath the blue waters of the Mediterranean Sea for many months had a seaplane been available.

But "might have beens" are tiresome things unless they point some workable moral for the future. The truth is that the hydro-aeroplane is not in a sufficiently advanced stage of development to admit of its proper employment with a fleet at sea. It has hardly advanced beyond the smooth water stage, and it is certainly incapable of withstanding rough weather. Few seaplanes in the world approach in their own sphere the average land machine in efficiency or strength. There is no reason to assume that, because this is the case at present,

it is likely to continue so for all time. Moreover, if the authorities would outline the type of aeroplane they need, it would greatly accelerate the production of a good machine.

CARRIERS' DUTIES.

If seaplanes are to be used with fleets on the high seas, then some method of transport must be developed. The modern ship of war is far too crowded with men and machinery to make it possible for seaplanes to be carried inboard. A separate ship must be provided, properly equipped for the rapid launching and stowing of machines.

We have several in existence now, which, while being better than any others in the world, are at the best only makeshifts. A seaplane carrier must not have been converted from any use, but must be designed throughout for one purpose. She must be sufficiently heavily engined to be capable of steaming at least twenty-five knots, in order that she may be able to keep pace with the main fleet. Not only must she have plenty of hold space for the stowing of complete machines, but she must also have elaborate workshops and good accommodation for officers and men.

And, moreover, she must not be regarded as a sort of general utility ship for the entire fleet. If the admiral's people cannot repair the admiral's motor launch, then the admiral should go without. And though the aileron of an aeroplane makes an excellent punkah, it is still more useful as a component part of an aeroplane, and the wardroom of "any ship" in "any navy" must continue overheated.

She should be armed against aircraft attack and against submarines. For the rest, her speed must save her. As the seaplane carrier increases in value so will the solicitude of the admiral increase as to her safety at all times. So do matters arrange themselves even in the King's Navy.

The seaplane acting with the fleets at sea would be responsible for all spotting for ships' guns against enemy ships or against shore positions, the spotter if possible being drawn from the ship firing. He would know better than any the idiosyncrasies of his gunnery people, and could give, consequently, a convincing air of verisimilitude to his reports. At the same time he would save the Air Service from much unmerited abuse (it must not be forgotten that much of the abuse of the Royal Naval Air Service is undeserved).

COAST PATROLS.

Another sphere of action for the naval aeroplane almost equal in importance to the first-named is acting as coast patrol, at home and abroad. There are at present in existence a number of coast stations which have been brought into being from time to time as the number of aeroplanes and senior flying officers has increased. These will in course of time be added to until no portion of the coast will be without its aerial patrol.

These patrols would act in conjunction with the naval authorities at the nearest ports, and would be under the orders of the senior naval officer at these places. Similarly, abroad, at points like Gibraltar or Malta, or any other of the many ports or stretches of coast line which are of importance to the British Navy. The aeroplane would be of great use in the suppression of gun-running in the Gulf or of piracy in the China Seas. Many fruitless cruises would be saved and promptitude of action—the dominating factor in these matters—would be greatly accelerated. To get the greatest efficiency it is essential that no distinction should be made between the Flying Service and any other arm of the Navy. The admiral commanding should be supreme, and his decision in any matter should stand without question.

Bomb-dropping is inexcusable in the majority of cases, in that it uses up many hours in the life of a machine

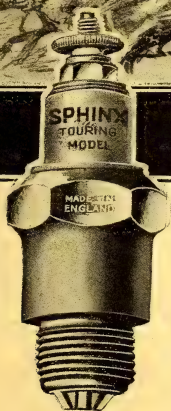
that might be far more usefully employed carrying out work of real advantage to the Royal Navy. The dropping of bombs on strategic points in German occupation can be quite safely left to the Army. When a fleet is attacking land batteries and positions, it is then permissible for aeroplanes to drop bombs on enemy stores or camps. Even aviators must have their amusements. An attempt to put out a gun by bomb-dropping is almost always waste of time. Bombs are chiefly effective against personnel.

STANDARD ORGANISATION.

The Navy has now organised wings much after the manner of the Army, and it would surely be well if some standard of organisation should be adopted throughout. The Navy has never been organised in the Army sense of the word in all the centuries of its existence. The personnel of ships varies to such a degree that it has not been possible. The Royal Marines are as much Army as Navy, and the excellence of their organisation is due to its being based on the Army model. The Royal Naval Air Service can, if the effort is made, be brought into orderly and proper lines. The change would doubtless add greatly to the value of the arm.

An objection to a squadron or wing formation for the R.N.A.S. has been held to be that the number of tiny stations about the coast tends to break up the squadrons until no semblance of the original formation is left. There can, however, be but little objection to dividing





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the coasts into a series of districts, each with a wing of two or three squadrons (the number to be uniform throughout the Service). In each of these districts would be a number of stations garrisoned by a squadron or a flight, according to its relative importance. The station, for instance, which was regarded as the headquarters of the Naval Air Service would have a wing, or even more than one wing, stationed there. Another wing would have its headquarters at, say, Dover, with detachments consisting either of squadrons or flights at Margate, Ramsgate, Deal, and other neighbouring ports.

Detachments borne in the seaplane carriers would be either complete flights or squadrons, and not merely indeterminate collections of pilots and observers drawn from anywhere.

This organisation does not apply merely to personnel, but also to matériel. There would be a proper wing establishment worked out to the last detail. Thus, when a flying detachment is required for a campaign in South-West Africa, a squadron (assuming a wing to be too large) or flight could be detailed for the purpose. Without haste or confusion, it would leave with its entire establishment—pilots, observers, air-mechanics, aeroplanes, repair wagons, transport, etc. There would be no need to improvise a squadron according to the idiosyncrasies of the officer commanding the unit from any stores that might be at hand and from details that might be available. Instead, officers and men who had worked together for months, and perhaps for years, would carry on their duties together in the face of the enemy. The past history of the squadron, added to the personal interest inseparable from the common life together, would animate all ranks to extreme efforts. Is it not a better alternative?

THE MARINES.

While the Royal Naval Air Service is yet in its infancy, would it not be possible to make a greater employment of Marine officers? It is easily possible to detach a number of Marine officers for service in the R.N.A.S. as wing and squadron commanders, and also in the lower ranks. The result would surprise many of those who are most interested in the success of the Flying Services.

It is too late in the day (nor would the Royal Marines like it) to make the Royal Naval Air Service a branch of the Royal Marines, but that has been suggested once before in these columns. It would ensure adequate training for all new flying officers. But what cannot be, cannot be, and it is waste of time to discuss it.

The training of officers and men of the Royal Naval

Air Service is one of the greatest problems of the moment in so far as that Service is concerned. Up to the present date there has been no common course through which all have passed. Some have gone to the Central Flying School and have been excellently trained, others have learnt all they know at Eastchurch, or at any other of the more recently formed Service schools. The result is that there has been no uniformity in training. Some have become excellent pilots and nothing else, others have become fair pilots and have known other things as well, but only in a few cases has a high standard of efficiency been reached in all subjects connected with naval flying. The Navy, to a degree unheard of in the Army, has relied on direct entry for obtaining officers. There is no wrong in this provided such officers are adequately trained in pure Service matters afterwards. If they are to look like naval officers they must know something of the duties of naval officers.

POST-WAR EXPANSION.

When the war ends there will be no further pressing need to maintain the roll of officers by direct entry and other slower methods may be tried. Is it not possible for cadets at Osborne to express a wish before leaving to specialise in aviation? If this were done then immediately on promotion to sub-lieutenant these officers might go into the Royal Naval Air Service with the unmistakable advantage of a good grounding in naval affairs.

If each officer so desired he might be permitted to make up his sea service as opportunity arose, so that at any period in his career he could revert to the executive branch of the Navy. By this means all troublesome questions of seniority (now sometimes based on flying ability alone) would disappear and an officer would hold the rank to which length of service and experience entitled him. Also, though this may seem less important, the suggested scheme would provide some reason for the close similarity of uniform at present obtaining between R.N.A.S. officers and officers of the Regular Service.

Officers could also be entered through the Royal Marines after having undergone the usual training at Greenwich and having completed two years in the Corps. These officers would be posted to Royal Marine Wings or Squadrons. This again would simplify questions of seniority and also of different methods of routine.

There is no other ready manner of teaching flying officers the rudiments of naval knowledge. One cannot be taught the customs of the Service in the course of a few months.

THE ROYAL NAVAL AIR SERVICE COMFORTS FUND.

INCOME AND EXPENDITURE ACCOUNT TO OCTOBER 31, 1915.

INCOME.		EXPENDITURE.	
Dr.	£ s. d.		Cr.
To Donations, Contributions and Collections received from Well-wishers of the Royal Naval Air Service	1,235 1 1	By Shirts	129 8 2
		" Pants	308 9 8
		" Vests	195 17 2
		" Jerseys and Sweaters	192 15 4
		" Cardigans	71 11 2
		" Socks	4 14 9
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		" Gloves and Mittens	1 15 0
		" Handkerchiefs	4 11 0
		" Buttons, Towels, Meat Lozenges, Soap, Chocolate, and Note Paper	10 2 5
		" Gramophones, Records, Footballs, Games, etc.	91 1 8
		" Cigarettes	1 5 0
		" Packing Expenses and Carriage	31 9 6
		" Postages and Sundries	8 2 7
		" Advertisements	5 0 0
		" Balance at Bank, October 31st, 1915	173 18 8
	£1,235 1 1		£1,235 1 1

We have examined the above account with the books and vouchers of the Fund, and find the same to be correct.

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If this arrangement comes into being it will be no longer necessary to send officers for training to the Central Flying School and that establishment will become, as it should have been in the beginning, entirely military. So far as flying is concerned Eastchurch could be the Naval school. This place also has the advantage of being close to the sea, which makes it possible for seaplane work to be carried on at the same time. Another excellent station for seaplane training is Calshot.

If it is desired to have an effective second line in the R.N.A.S. it might be possible to form Royal Naval Volunteer Reserve Squadrons on the Thames, Mersey, Clyde, Tyne and other places where that body has local headquarters. Officers and men of the Royal Naval Reserve are in employment at sea in peace time and they could take no part in flying even if the opportunity arose.

OBSERVERS.

The training of observers should receive as much attention as does that of pilots. No effort has been made up to the present to form any body of observers capable of consistent work under war conditions. It has been the habit to turn all the misfits into aerial observers irrespective of whether they possess any knowledge of the art of war or not. It has then been necessary to borrow officers from the Army, or very junior officers from ships, to enable the work to be carried out with any success at all.

The observer should be highly trained. He should be capable of spotting accurately and quickly for ships' guns. He should be able to distinguish at sight the type and size of any ship of war and should have some knowledge of naval strategy and tactics. Enough of land warfare should be taught him to make it possible for him to select shore targets for ships. The Navy has no natural facilities such as the Army possesses for the

education of observing officers, and it would be, therefore, necessary to organise a school for this purpose. A proper selection of officers from the Navy and the Marines to act as instructors would ensure success.

AIRSHIPS.

For the past two years the Royal Naval Air Service has had the whole of the organisation and management of those squadrons dealing with dirigible balloons, kites and kite balloons. The Germans have demonstrated some of the possibilities of these craft in the various visits of the Zeppelins to this country. For night work they are unrivalled. In the day under present conditions they are much inferior to aeroplanes except for oversea work.

The smaller type of non-rigid dirigible balloon is of high use as a patrol over the sea in order to protect ships of war from submarine attack. The employment of aeroplanes in this way is attended by serious risks in case of engine failure, and in any case there is such a shortage of heavier-than-air machines that such craft should be concentrated on the most valuable side of the work possible to them.

The kite-balloon is slowly coming into its own. As a spotting agent for ships bombarding an enemy coast it is unrivalled. It is cheap to maintain and it is simple to work. The observer, moreover, is in telephonic communication with his base, an advantage of which it is necessary to have experience if one is to thoroughly appreciate it.

As things stand at present it is not possible to say much more about the Royal Naval Air Service. As this flying develops new possibilities will arise for which new methods will be necessary. Its best friends are those who in the immediate future will maintain silence about its doings until the history of the war is written in the years to come.

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THE NEXT STEP.

BY H. F. SMALMAN-SMITH.

Whether the end of the Great War will bring that boom in Aviation which is looked for by some people, or that instant slump which is expected by others, is matter for healthy speculation. That the rush of Service orders for current standard types will show a rapid falling off, however, seems pretty well assured.

Failing the spur of urgent need, the super-leisurely habit of the official mind will tend to re-assert itself and exact its revenge for the moderate degree of activity into which it has been hustled by the war. In all probability the "best brains" will be set to work to evolve new standard types based upon the experience of completed campaigns; and in the meantime the familiar thinning-out process will be again at work amongst the ranks of aeroplane-builders.

That an immense military demand for aircraft will arise from the wreckage of the present war is certain enough, but it seems equally beyond dispute that some breathing space will have to be allowed for the readjustment of the World's finances before the new orders materialise to the benefit of the aeronautical industry in general. *En attendant*, much may happen, and it's a short, short way to Carey Street when Governments go a-thinking.

The salvation of the industry lies unquestionably in the acceptance of the aeroplane as a commercial vehicle, offering in certain directions notable advantages over other present means of transport which may suffice to justify its serious employment.

To imagine, however, that present-day naval, military or sporting aeroplanes can be counted upon to satisfy the primary conditions of commercial efficiency is absurd, and firms who may be so ill-advised as to regard their current service-designs, or any hasty adaptations there-

of, as likely to "fill the bill" when faced with a demand for severely commercial aircraft, will certainly be disappointed. This becomes increasingly clear as it is recognised that the designers of a warplane and a commercial aircraft must start from fundamentally different points of view.

In the former instance prime cost is to all intents and purposes a negligible factor; in the latter, capital expenditure must be kept within a limit on which a certain definite return is reasonably assured. The securing of such qualities as rapid climbing, high speed, flexibility in manœuvre, may eclipse all other considerations in a military design. The commercial machine must fly fast, or climb quickly, or carry additional weight, only when some advantage assessable in terms of £ s. d. may be obtainable by the special ability involved. It must constantly make sacrifices of more showy qualities to such matters as ease and economy of working, reliability in every stage of transit, and all that goes to the creation of profit-earning capacity.

Moreover, it must not be forgotten that the commercial machine may depart in many respects from the ideal of the enthusiast for the perfect aeroplane, *per se*, a conception which is more likely to earn material encouragement in the future from the aerial counterpart of the yachtsman of to-day, to whom perfect proportions, delicacy of control, and the joy of exquisite movement in the blue will doubtless make irresistible appeal.

Turning from this inspiring vision to the business aspect of things, three types of commercial aircraft appear to be indicated for early development.

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(3) The long distance passenger-craft—the essentials of which are too obvious to need statement.

A multiplicity of other types designed for various uses will doubtless be evolved in due course, but for the moment the foregoing would appear to fill pretty nearly the measure of commercial need.

It is safe to assert that a satisfactory approximation to the essentials of any one of these types could be produced and standardised to-day with no excessive capital expenditure, allowing the necessary margin of time for experiments of the trial and error order.

It is equally clear that no current type of machine comes sufficiently near to the conditions formulated to be regarded as commercially efficient. Here then, if the writer's views are correct—which is, of course, quite open to question—are several distinct lines on which manufacturers, uncertain of their position in the coming scramble for favours, may do well to concentrate their attention in such leisure as the vagaries of Government inspectors and the solemn divagations of Government departments may leave them.

Specialisation on particular items in aeroplane construction with a single eye to industrial requirements may, in many cases, be found to pay better than experiment with designs of new types of machines in consideration of the minor capital risk involved. Enterprise of this character may indeed prove an avenue to profits of a magnitude greater than any obtainable in the designing and construction of entire machines.

Some small beginning has already been made in this

direction, but so far little more appears to have been attempted than the production of duplicates of component parts of current standard designs. The time may not be far distant, however, when the aeroplane designer will be able to base his calculations upon a combination of parts, each produced by distinct specialising firms, with infinite resulting economies in risk, time and expense.

A word in conclusion regarding the pessimism which pervades some quarters, and to which allusion has already been made—a pessimism which affirms that with the end of the war we shall see a relapse to the state of things obtaining in the aviation industry preceding the outbreak of hostilities—or something worse. Such views would appear to lack the flimsiest foundation. The old order is gone and cannot recur.

Prior to the war the industry was for the most part the happy hunting ground of the experimentalist, the amateur and the visionary. Very little which could by courtesy be termed business organisation was to be found within its limits. The amount of capital sunk, or visibly represented, was matter for scoffing. To-day the position is widely different, its effects must be largely permanent. The experimentalist has been brought within bounds, the amateur is converted into a business man, the visionary—when he is not under the thumb of authority in blue or khaki—has passed into limbo.

Definitely decisive, however, is the condition of the industry's capital account, daily extending into bigger and bigger figures. The amount at stake is now too great, the interests involved are of too far-reaching a character to permit of the Aircraft Industry ever reverting to anything resembling former conditions, and, although Government orders may for a while decline in volume, manufacturers who have the foresight to anticipate and prepare for the new markets arising beyond the chilling influences of officialdom will reap their reward.

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gether apart, so much may be stated on a sober consideration of very evident facts. The evolution of the aeroplane, progressively the toy of the scientist, the joy of the crowd, the weapon of the Services, cannot halt at its present stage. It is up to manufacturers to be ready for the next step.—H. F. S.-S.

RUNNING COSTS.

Mr. Smalman-Smith's article presents a very fair view of the case for the commercial aeroplane. With the outbreak of peace the commercial possibilities of the aeroplane will have to be exploited to the full if the Trade does not wish to be crippled in the inevitable lull that must come in the output of war machines. At the present time there must be some millions of capital invested in plant peculiarly suited to the production of aircraft, and this capital must be employed after the war.

It is therefore well to look into some of the figures concerning the running costs of a weight-carrying or passenger-carrying aeroplane.

Take, for example, an aeroplane of 1,000 h.p. Allowing a carrying capacity of 20 lbs. per h.p.—which represents fairly high efficiency, but is permissible because big aeroplanes should be more efficient than small ones—we have a lifting capacity of 20,000 lbs. The machine and engine may weigh about 8,000 lbs., leaving a useful load of 12,000 lbs.

Allowing one hour's petrol for 1,000 h.p. at 0.7 pints per h.p.-hour, we get 87 gallons per hour, or 435 gallons for 5 hours, which will weigh 3,130 lbs. Oil for 5 hours should weigh about 313 lbs. Thus the total weight of fuel should be 3,443 lbs.

Deducting this from the 12,000 lbs. useful load, we find 8,500 lbs. available for 42 passengers at 200 lbs. each—including light baggage—or 20 passengers and about 4,000 and odd lbs. of mails or heavier baggage.

Now, the machine should have a speed of between 80 and 90 miles an hour, so we may assume that it is ready at any time for a non-stop journey of 300 miles in the 5 hours, even against a moderately strong head wind.

The cost of 435 gallons of petrol, at the top price of 1s. 6d. per gallon, is £33, and the oil should cost about £12, so the total fuel cost should be inside £50 per journey.

The rest of the running costs would depend on the price of the machine—which ought to be somewhere in the region of £10,000—on the number of trips it could do per annum, and the number of trips it could do without serious mishap. One may assume that with powerful and reliable engines the chances of mishap would be small, as nearly all accidents are caused either by engine failure at awkward moments, or by pilots trying to do something of which they are incapable. On the whole, one might take it that with proper, careful handling the aeroplane should last till general wear and tear necessitated rebuilding.

On this basis, running costs, other than fuel, may be estimated on the capital involved in the machine, the housing, and in general running expenses, which should be only slightly higher than those of a garage running motor-buses or motor-cars to a similar capital value.

Not being a taxi-cab proprietor, I do not propose to work out these costs, but people already interested in such industrial matters will do well to consider the aeroplane proposition in the light of their own experience.—C. G. G.

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OF

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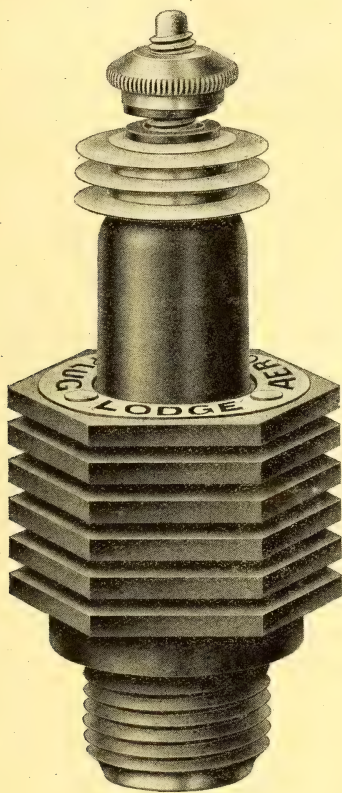
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THE AIRCRAFT SUPPLIES COMPANY.

The articles on "The Organisation of Small Factory Output," by Mr. George H. Mansfield, which appeared recently in *THE AEROPLANE*, are about to be issued in book form, when they will doubtless be read with renewed interest and profit by many in the aircraft industry.

The author had many years' experience in chartered accountancy in the City, but gave that up for aviation in the early days. As far back as 1910 he was connected with a well-known firm, finally becoming works manager. Realising the possibilities which existed of rendering assistance not merely to one firm, but to the industry as a whole, he decided to branch out on his own account.

His original intention was to offer his advice, based on personal experience, in matters of business organisation. During the first few months he was consulted by some important companies, and laid out the arrangement of a new aircraft factory for a large firm now prominent in that line.

In the course of time he recognised that there was a distinct opportunity for someone to act as buyer on an organised plan for aircraft manufacturers generally, and this was the origin of the Aircraft Supplies Company, which has already well justified its existence.

The Aircraft Supplies Company does not in any way compete with the buyers of the different firms, but endeavours to give them all possible assistance. Mr. Mansfield has an intimate knowledge of the requirements of the trade and of the sources of supply, and he has thus succeeded in establishing what amounts to a practical form of co-operation.

Whereas several small firms, for example, might each require, say, fifteen gross of a particular kind of bolt or nut, and have difficulty in placing their orders for these small quantities, the Aircraft Supplies Company are able to collect these orders and place an order with a manufacturer covering the whole quantity.

The firm deal in practically everything required for aircraft, and make a rule never to quote for anything unless actually in a position to supply. The A.S.C.'s weekly bulletin is a useful feature, as is revealed by the fact that when it was started there were 35 firms on the list, whereas at the present time nearly 90 copies are sent out regularly. Here is some evidence of real progress, and anyone who knows Mr. Mansfield knows that if hard work will bring success he deserves it.—D. W. T.

WIRE.

The question of strength in the cross-bracing of an aeroplane is one of so great importance that nothing, but the very best is good enough for this purpose. Messrs. Cradock and Co., of Wakefield, have had long experience in the manufacture of wire rope, being fully equipped for its production from the pig-iron onwards. As the steel is prepared in their own furnaces, the rods rolled, and the wire drawn in their own shops, they are in a position to advise customers as to the most suitable quality and flexibility of rope for the work to be performed.

The strands and cords tabulated in the firm's pamphlet dealing with those most suitable for aviation purposes are all composed of tinned steel wire of the highest quality. The stranded cords have a wire main core, because a hemp core would absorb and retain moisture, whereas a wire strand in the centre has, of course, no tendency to do this.

The core is spun the opposite way to the lay of the rope, thereby helping to retain the extra twist put into the stay when a single-threaded tightening screw is used.

In the list of stranded cables suitable for aircraft are included flexible steel wire strands composed of 7, 19, and 37 wires, and with breaking strains ranging from 390 lbs. to 9,650 lbs., and flexible steel wire cords composed of 49, 133, and 259 wires, and with breaking strains ranging from 1,169 lbs. to 16,345 lbs.

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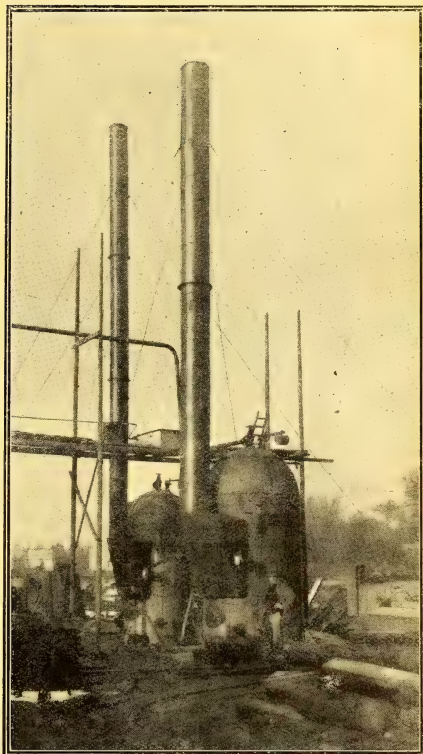
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WAR BARGAINS.

Burberrys' annual half-price sale of every sort of tailored garment that either sex requires for outdoor purposes opens on January 1st, and promises to be memorable not only for the size and variety of the stock to be disposed of, but as a seasonable appendix to the financial admonitions of the Chancellor of the Exchequer, who has issued a solemn warning that for some years it will be necessary for us to live on half our income and allocate the other half to war loans and taxes.

Bargains are no longer merely attractive opportunities: they are conditions precedent to the acquisition of many things which, before the war, were regarded as indispensable rudiments of life. Unless they can be bought below staple prices, luxuries are prohibitive to the majority, and must remain so until the Empire earns the reward of victory and peace restores prosperity to a convalescent and purified world. But many of us, painfully subsisting on half our normal expenditure for necessities costing 40 per cent. more than formerly, can to some extent modify the rigour of the situation by buying a Burberry weatherproof top-coat, suit, gown or hat at half-price. Never could occasion be more apposite, as the reduction in means finds exact compensation in the price of an extremely useful yet sumptuous commodity, exclusive in material and design, and the best of its kind obtainable anywhere.

In spite of their obsession by naval and military orders, into which highly specialised branch of outfitting Burberrys have thrown themselves with characteristic energy, the preparations for their 1916 sale are more complete and exhaustive even than last year's, and it will no doubt be equally successful. A larger number than ever of the choicest and most luxurious Burberry models have been relegated to the sale fixtures, and marked at half-price, as well as an immense assortment of men's suits for all purposes, being in fact the whole remaining 1915 ranges

NEXT WEEK'S "AEROPLANE" will be a **SPECIAL MILITARY ISSUE** similar to this issue, but, it is hoped, somewhat larger.

It will contain an Art Supplement showing the development of the Military Aeroplane by various nations. **COPIES SHOULD BE ORDERED EARLY.**

left in the completed suit department. In addition, the large accumulation of distinctive cloths, woven and proofed by Burberrys' special processes, and covering every description of texture, weight, colouring, and pattern, have been lavishly appropriated to the making-up of garments, which will be sold in such reduced prices as bring them easily within the reach of everyone who prefers the best materials and most efficient models for the excellent reason that they are invariably the most economical and satisfactory.

There are also included in the sale a few military weatherproofs and other articles of Service equipment which have either been used as models or left on hand during the year's trading.

An illustrated catalogue of the sale, including both men's and women's dress, will be forwarded free on receipt of a postcard by Burberrys, Haymarket, London, S.W., mentioning **THE AEROPLANE**.

A BOOK FOR ENGINEERS.

Messrs. Rubery, Owen and Co., the well-known engineers of Darlaston, have just issued a well-illustrated booklet dealing with material for the following trades: Aeroplane accessories, steelwork for aeroplanes, pressed steel work, motor vehicle frames, constructional steelwork, engineering water purification, excavating machinery, fencing, gates, etc. This booklet will be sent free on application, and it should be stated in which item the engineer is particularly interested.

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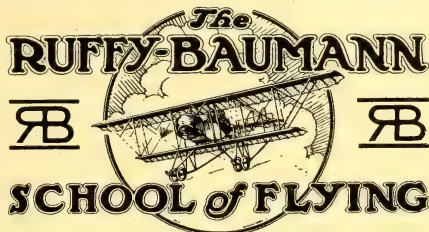
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CELLON GOING AHEAD.

Six months ago, thanks to the steadily increasing demand for Cellon, the works were practically doubled to cope with orders, Government and otherwise. As the national output of aeroplanes grows, however, the sale of this well-established dope shows a corresponding expansion, and it has now been found necessary to double the size of the works once more. This is gratifying testimony alike to the merits of Cellon and to the personal energies of Mr. A. J. A. Wallace Barr, who is by this time known—or should be—to every builder of aeroplanes in the country, and to most, if not all, in France.—D. W. T.

THE WEEK-END AT HENDON.

The members of the energetic colony at the London Aerodrome celebrated the Christmas season by unanimously abstaining from work. The Grahame-White offices and works were closed from noon on Friday until Wednesday morning—a well-earned rest for all concerned.

The public stayed away, the megaphone officer is reported to have retired to a deaf-and-dumb institution *pro tem.*, and Plant is said to have gone to a cat-show.

The only feature of the week-end was a hurricane in a big hurry.—D. W. T.

SCHOOL REPORTS. HENDON.

AT THE LONDON AND PROVINCIAL CO. SCHOOL
Instructors for the week: Messrs. W. T. Warren, M. G. Smiles, C. M. Jacques, H. Sykes, and W. T. Warren, jun.

Pupils doing straights or rolling alone: Messrs. Snow, Rimer, Loomes, Dawson, Stevens, Starey, Eggestaff, Lambert, Heyn, Thorp, Medaets and Martin.

Pupils doing figures of eight or circuits alone: Messrs. Burgess, Martin and Medaets.

Certificates taken during the week by Messrs. Burgess, Martin, and Medaets.

Machines in use:—L. and P. tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.

Instructors for the week: Messrs. Edouard Balmann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

Pupils with instructor: Messrs. Hamtiaux, Cox, Winter, Edgar,

Whitaker, Hoskyn, Dobson, Laidlaw, Barnard, Flanders, Cuthbertson, de Lannoit, Vernon.

Pupils doing straights or rolling alone: Griffiths, de Lannoit, and Vernon.

Machines in use: Ruffy-Baumann and Caudron type (60- and 50-h.p.) tractor biplanes.

Two vacancies will shortly open at this school, and inquiries are welcomed from prospective pupils. Early application is advisable.

AT THE BEATTY SCHOOL.

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell and L. L. King.

Pupils with instructor: Messrs. Barnes, Barrow, Drysdale, Martin, Mattos, Murdock, Onley, Owen, Patterson, Podmore, Williams, Jaquin, Markham, Brand, Mossop, Hoskins.

Certificates were taken during the week by Flight Sub-Lieut. Savill-Onley.

Machines in use. Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractor biplanes.

Three passenger flights were given.

Week ending December 19th. (Delayed in transit.)

Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, L. L. King.

Pupils out during week: Messrs. Baldwin, Baker, Barnes, Barrow, Begg, Bowick, Branford, Brynildsen, Byrne, Collier, Drysdale, Edwards, Fellowes, Godfrey, Hodgson, Hughes, Jones, Martin, Mattos, Murdock, Onley, Owen, Patterson, Podmore, Sainter, Thompson, Whincup, Williams, Young, White, d'Allesina, Sellars, Aoyang, Wainwright, Johnson, Jaquin, Greenhill.

Certificate was taken during the week by Mr. R. G. Begg.

Machines in use: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes.

AT THE HALL SCHOOL.

Instructors for the week: Messrs. H. F. Stevens, C. M. Hill, J. Drew, and C. Anstey Chave.

The following pupils received instruction in rolling and straights: Messrs. Cumberbirch, Arnsby, Ridley, Lieut. Cooke, Messrs. Chapman, Collins, Smith, Cosgrave, Ormerod, Thom, Bennett, Neal, Millburn, Woolley, Le Coq Moir, Rochford.

Doing straights, half circuits, etc.: Capt. Gray, Messrs. Redford, Butterworth, Evans, Cook, Dresser, Dodds, Mann, Nicolle, Stirling, Shum, and Sepulchre.

Messrs. Stirling, Evans, Butterworth, and Cook making good progress.

Machines in use: Hall tractor biplanes.

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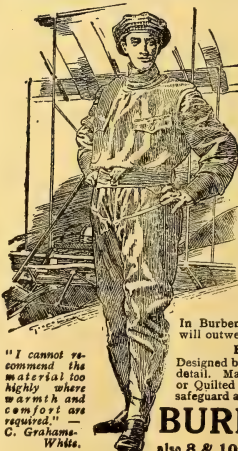
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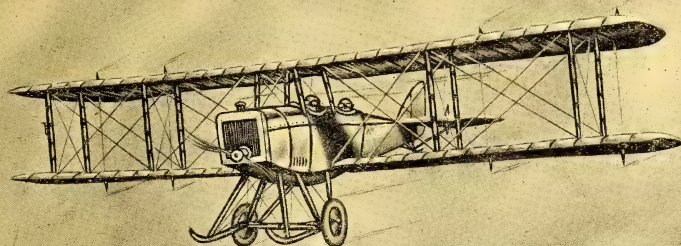
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E.B.H. LANDER, 1915.

THE CASE FOR THE AIRSHIP.

A prophetic paper was read by Lieut. (now Commander) F. L. M. Boothby, R.N., on Wednesday, April 17th, 1912, before the Royal United Service Institution. Rear-Admiral A. H. S. Bacon, C.V.O., D.S.O., R.N., was in the chair. The following passages are taken verbatim from the paper and are published by kind permission of the Council of the R.U.S.I. Not only are these passages of high value, as showing the knowledge available nearly four years ago, but they actually indicate in many ways what still remains to be done either during or after the war, and they lay down certain principles which hold good for all time.

Lieut. Boothby was scrupulously fair to the aeroplane in his remarks, but it is the case for the airship—on which subject he had specialised—which is quoted hereafter. His arguments are as sound to-day as at the moment when they were spoken, and no better case has since been presented.

Lieut. Boothby said:—

Up to the present the science of aeronautics, as a whole, has suffered from the fact that the two main schools of thought—I mean the aeroplane and airship schools—have not worked together in a spirit of mutual co-operation, but have been at pains to decry the merits of the one type and to praise their own particular favourite, as might well be expected when vessels so different in design and functions have to be discussed. Experts are apt to take a one-sided view of the capabilities of their favourite, to the disadvantage of its rivals. The result is that both branches suffer more from the criticism of their opponents than they gain from the advocacy of their friends. Looking at the matter from the point of view of utility to the Navy, both types have advantages for service at sea—one for comparatively short flights and the other for more extended cruises, whilst there is a large region where their functions overlap.

THE AIRSHIP.

Engines giving an output of 400 h.p. will drive a well-designed 21 ton airship at the rate of about 47 miles per hour, requiring 3 tons of petrol and oil for the purpose in 24 hours. The equivalent distance through the air is 1,200 miles. By using the formula

$$\text{Speed at } x \text{ power} = \frac{\text{Full Speed}}{\sqrt{\frac{\text{Full Power}}{x \text{ Power}}}}$$

we find that at half power she will be able to proceed for 48 hours at 37.3 knots, which is equivalent to a distance of 1,790 miles, or for four days at quarter power, which would give a speed of 29.6 knots, or a distance of 2,841 miles. Three tons is a small amount of fuel for a 21 ton airship to carry. If she were starting on a really long cruise, she could take two tons more than she is able to lift statically, the extra lift being given by the horizontal rudders and engines, assuming that the ship could get up speed by running along the surface of the water; but, of course, full speed could not be attained under these circumstances.

Large radius of action in a dirigible, apart from its value in scouting, is highly desirable for the following reasons: In the first place the lift of a dirigible falls off as hydrogen gradually absorbs the air and diffuses—a process known as osmosis—so that a good reserve of buoyancy is desirable. With the materials in vogue a year ago the falling off in lifting power and consequent radius of action was fairly rapid, the gas-bags requiring refilling about once in three weeks. Happily, it seems that in the near future refilling once in three months will be sufficient, improvement in the gas-holding qualities of fabrics recently tested being so great, whilst at the same time their

weights have been considerably reduced. Referring to the Report of the Advisory Committee for 1911, we find on page 71 that fabrics have been tested having as low a permeability as 0.1 litre per square metre per 24 hours, and three samples with less than 0.6 litre per square metre, compared with a permeability of ten litres per square metre which was considered good a short time ago, whilst the new fabrics do not deteriorate with exposure to any extent, a great contrast to the older types of gas-bag material.

Some figures for the "Adjutant Réau" are interesting. She was filled for over two months before making her well-known cruise of more than 500 miles. During this period she lost only 2 per cent. of lift due to osmosis, whilst the daily leakage was never greater than 1.7 per cent. After being filled for six weeks she was actually able to lift 3,400 kilos of ballast, or 100 kilos more than when she was first filled (this, of course, being due to the action of the barometer), and during the whole period of two months the ballast lifted did not fall below 3,000 kilos. It should be noted that she is not constructed of the very latest type of fabric.

Again, it may be desirable to arm airships with guns to drive off the enemy's aircraft, in case we should wish to look into his ports or approach his fleet, or to prevent his aircraft from obtaining information we wish to conceal. Unless there is a large margin of flotation to draw on, mounting guns or carrying explosives must dangerously reduce the radius of action, especially in bad weather. Considerable radius of action and complete equipment therefore necessitate large airships, and for this reason the non-rigid and semi-rigid are not likely to be of so much use as the rigid for ocean work in the future, their size being limited with the materials at present at our disposal.

To realise this, let us take any type of airship and double its length and diameter. We will call the length L and diameter d . The lift increases as $L d^2$, and will, therefore, be eight times as great. The resistance, and therefore the engine power, increases as $L d$, and is, therefore, four times as great. If, now, we consider the airship as a beam when we double its length, the load remaining the same, and in its same relative position, we double its bending moment. As, however, we have shown that the weight has increased eight times, the bending moment is increased 16 times, or as L^4 .

It is therefore obvious that it is useless to contemplate increasing the size of airships and leaving the increased weights lifted in their same relative positions. They must be distributed along the hull, so that the bending moment is not increased. In the ideal airship there would be no bending moment whatever; each section of the ship would take a due proportion of the lift. There is little practical difficulty, especially in the rigid type, in getting this distribution of load, so that the hull weights would increase in proportion to $L d$, or nearly so; that is, would be multiplied by four in this particular instance, whilst gas-bags and outer cover would be increased in the same proportion, so we see that in a rigid airship, all weights, hull, gas-bags, outer cover, engines for the same speed, all increase in a less proportion than the volume and lift, the exception being the stresses on the transverse frames, due to lift on the top and the load underneath. This might increase as $L d^2$; but by tying down the gas-bags, or, as I consider preferable, by running wires through them, this ratio of increases can be reduced, and certainly need never be exceeded; whilst it should be noted that it is perfectly feasible to carry part of the load, such as petrol tanks, on the top of the airship.

The stresses and strains in the non-rigid are the same; but, as we increase the size, we find that the weight of

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the gas-bag increases at a greater rate than the volume and lift. Doubling the length and diameter as before, the surface, and therefore the weight, of the fabric would increase as $L d$; but, having doubled the diameter (the internal pressure being kept constant), we must also double the thickness of our fabric. This weight will increase as $L d^2$, or at the same rate as volume and lift, but, owing to the increased speeds obtainable from our larger ships (and neglecting any increase necessary for increased bending moment, should there be any), we must increase our internal pressure, which will again require increased thickness and weight of material, so that our gas-bag weight is increasing at a greater rate than our lift, and a time will come when no increase in size will be of advantage, the actual limit depending upon the material used.

In looking ahead it seems probable that airships will increase in size as other ships have done, and therefore it is advantageous to work on a type which seems capable of great expansion.

Further points in favour of the rigid as compared with the non-rigid and semi-rigid are that in the first place the gas-bags are subject to no stresses except to those due to the head of gas, whilst in the second case it is necessary to exert additional pressure by pumping air into the ballonets to maintain the shape. The pressure on the envelope may be greatly increased by her progress through the air, not at the bow, where the internal pressure should about equal the external, but at the stern, where, if the airship is not of stream line form, or if any deformation takes place, a partial vacuum may be formed, and the stresses on the envelope will then be the algebraic sum of the internal and external pressures.

Again, in the rigid type, should she be seriously wounded, say by a splinter of a shell—bullets do not matter particularly to either type—only one gas-bag would be damaged, and it is probable that the ship would still be able to remain in the air by using the lift obtainable from her aeroplanes; at any rate, her speed of descent would be slow. With a non-rigid, a serious wound means instant collapse.

The Italians, I believe, have fitted some diaphragms inside their ships, with small holes in them, with a view to preventing the airship being completely deflated immediately she receives a large wound, but it is of doubtful value. These diaphragms also have the effect of checking the surge of the hydrogen towards the bow should it be tilted upwards, and the drop of air into the after part of the ballonets, another defect of the non-rigids.

The advantages of the non-rigid over the rigid type appear to be that the deterioration of the hydrogen due to osmosis may be somewhat reduced by keeping it under pressure and so increasing its density in proportion to air, whilst for army work it may be deflated in emergency and the gas-bag packed up. This quality is not likely to be of great use at sea, as anyone who has had to handle a deflated gas-bag on the water will affirm. If, in addition, we take into consideration the ease of mooring a rigid ship by the bow, although the possible claims of the "Astra-Torres" type, with its internal roping, must not be forgotten, I think it will be granted that the rigid is the most promising type for us to develop for sea service, though the non-rigid may be of great use for harbour defence and training purposes. [The prophecy has been absolutely justified in war.—Ed.]

The main characteristics of a rigid or modern type are a number of longitudinal girders, generally built up in triangular form, running from bow to stern, and joined together in some cases by spirally winding round them a system of similarly constructed girders, or else by connecting the longitudinals by transverse frames and staying them to each other by wires for mutual support. Inside the frames go the gas-bags, 16 or so in number, and on the outside the outer cover, leaving a foot or so air space between the two. The engines are suspended below.

EFFECT OF WEATHER ON AIRSHIPS.

Weather has such an important bearing upon the subject of airships that it is necessary to consider the question briefly.

Unlike the aeroplane, which need not be sent up unless the weather conditions are considered suitable, an airship for sea service must be prepared to meet all weathers. An airship that has to live in a shed is of little use, as, when she is urgently required, the wind may blow across the mouth of the shed for days and make it impossible for her to come out. Revolving sheds are a possible solution for small craft, but for large ones they are out of the question if only on the score of expense.

There are two methods by which an airship not in use may live through a gale. The first method, and the best, of doing this is to have a fixed post in the centre of a lake, the top being the same height as the bow of the airship when the gondolas are just touching the water, the bow cap being secured as close to the post as possible. Lying in this way, should the ship be struck by a side wind, she heels over slightly, due to the drag of the gondolas through the water. The act of her heeling over, and her sideways motion, compresses the air under her, and the gondolas being shaped to assist this, the airship rises until the gondolas slither over the surface of the water or rise just clear of it. The ship may swing through very considerable angles in this way, the only difficulty being to get boats alongside, but then, it is difficult to get boats alongside any ship in rough weather. By this method, provided the post is strong enough, there is little likelihood of her breaking adrift. The pressure on the bow of a "Schwaben" when the wind is blowing at the rate of 100 miles an hour is about 13 tons, and the strength of the bow should be well over 70 tons.

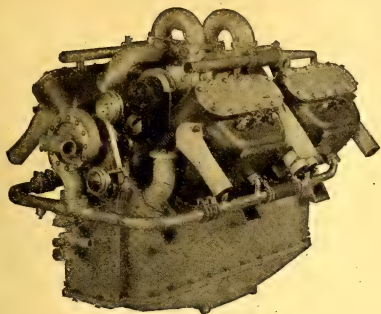
One objection to this method is that it increases the wear and tear of the outer cover, as the ship is always in the condition of being under way. This is a very small objection, as the outer cover is comparatively cheap and is easily replaced. This system, first introduced for Naval Airship No. 1, has since been adopted by the Army, "Astra-Torres," and Siemens-Schuckert firms, I believe, with complete success, but, of course, when moored over land the airship is kept clear of it, buoyancy being given for the purpose. In heavy weather it may be desirable to keep ships moored over water in the air, but for winds up to 45 m.p.h. they ride perfectly comfortably on the surface, which is a great convenience, as men can be moved about without troubling about ballast. [It is well to note that the mooring-post and nose-cap for airships was invented by the Navy, as it is generally claimed as the invention of the Royal Aircraft Factory staff.—Ed.]

The other possible method is to build large airship harbours, consisting of a considerable area surrounded by a high wall or bank, into which airships can be drawn from overhead. We are all aware how the air is deflected upwards by any obstruction, and it seems quite possible to construct a harbour on these lines which will deflect the wind over the ships inside. There are several natural harbours I know of, such as a valley between Barrow-in-Furness and Dalton, where it is practically always calm, and there must be very many such places in hilly countries. Old quarries may be useful in this direction.

WIRELESS.

When we come to consider the behaviour of airships at sea in relation to the weather we shall find that wireless telegraphy is of the greatest assistance. A point in favour of the airship is that, unlike the aeroplane, it can receive as well as send a wireless message. Such importance is wireless likely to assume, that I imagine in the near future the Meteorological Office will have to be fitted with its own wireless station and work on its own special tune to transmit warnings and advice to aircraft.

Dr. Shaw, of the Meteorological Office, assisted by Mr. Dines, has been working out what would happen to an airship starting at noon daily from Plymouth, and trying



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to look into Yarmouth, returning at once when she has done so. The distance in a direct line is 250 miles, and on every occasion from February 21st to March 8th the airship got to Yarmouth, except on March 2nd and 8th, when she did not start, the weather making it obviously impossible to return within a reasonable time. The longest time taken to get there was eight hours, and the shortest four-and-a-quarter, though she was only steaming at 30 knots in this last instance, and getting back was very slow work as it was assumed she was only a 40 knot ship, so she only made five knots over the earth.

In this connection the importance of good control in the vertical plane is manifest, as had this theoretical airship been able to keep very close to the surface she would have only found about half the gradient wind, whereas it was assumed that she would have to keep at such a height that she would be subject to a wind equal to two-thirds of it.

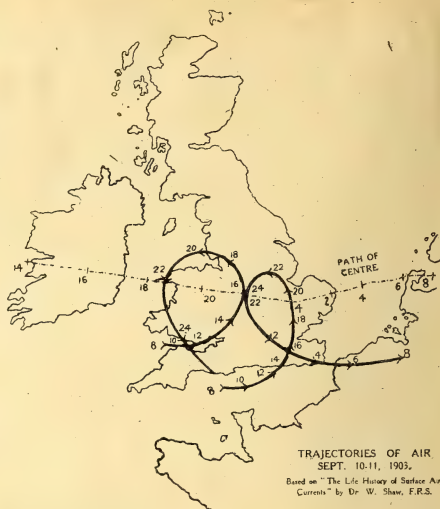
The following illustration will show how useful wireless telegraphy would prove on occasion. Often it is a perfectly feasible plan to proceed around the centre of a storm, returning with the assistance of the N.W. to S.W. winds found on the other side. It is not absolutely certain in those cases in which the particle of air approaches the centre very closely that it is the actual one to come away from it again; but in any case the one originates so close to where the other vanishes that they may be considered as the same, and, given engine power, there should be no difficulty in getting around the centre at all, although the distance traversed in doing so may be very great indeed at times.

An interesting point to notice is that any wind whatever, from any direction, reduces the radius of action of aircraft, which is a maximum in a calm. Let x be the time flying with the wind and y the endurance. Then the sum of the speed and wind multiplied by x equals the difference of the speed and wind multiplied by $(y-x)$. y is known, so x and consequently the radius of action can be found. For winds not from ahead or astern it is necessary to resolve the speed and wind along the proposed course and then work out the formula in the same way.

In dealing with aircraft which have large radius of action we must enlarge our ideas of distance. I should not be surprised if in the near future it was considered quite an ordinary event for an airship to run 600 miles north or south to avoid the central regions of a storm. Dr. Shaw points out that it is highly desirable for aircraft to avoid the S.W. to N.W. quadrant of a circular storm on account of the prevalence of "line squalls," such as destroyed H.M.S. "Eurydice" off the Isle of Wight. There has been one case of a free balloon being caught in a squall of this description and being brought to earth. Whether a dirigible could weather one we have yet to learn, but probably so, as, if well handled, her horizontal rudders will assist her in addition to her being able to discharge ballast. A phenomenon of these line squalls is that they have a downward trend accompanied frequently by hail or snow, the weight of which tends to bring the airship down. Summing up, we see that from aeroplanes we may expect to be able to scout over comparatively short distances as compared with the longer ones a dirigible is capable of, and that an aeroplane is capable of taking shelter in bad weather while a dirigible is not; and, having regard to their respective limitations, we will now see how these types of aircraft may be used in connection with the Navy.

AEROPLANES FOR SCOUTING PURPOSES.

Taking the case of aeroplanes first, it is obvious that they cannot keep station on fleet for long, and, as their speed is not variable, they will be forced to fly in circles—a somewhat wasteful procedure. Aeroplanes, therefore, must be carried in ships and sent up when needed. In calm weather, such as is found in the Mediterranean, it is conceivable that they may be of the greatest use.



Using the formula

$$d \text{ (miles)} = \sqrt{\frac{2}{3}} h \text{ (feet)}$$

we find that an aeroplane at a height of 5,000 feet could see large objects such as a fleet up to 80 miles, and objects could frequently be seen at this distance in clear weather. It would, therefore, pay a cruiser searching for the enemy to keep an aeroplane constantly aloft. The sea there in summer is generally smooth, and an aeroplane alighting on the water close to a ship would probably be hoisted on board in about five minutes. The cruiser, steaming 20 knots, and with an aeroplane constantly in sight, could search a very large area in the course of twelve hours.

A situation where aeroplanes will, however, be of the very greatest use is in searching a deeply indented coast for the enemy's ships and torpedo craft. A chart of the S.W. coast of Ireland shows the course to be pursued by a 21 knot scout searching for hostile torpedo craft and by the same scout when assisted by an aeroplane. It will be seen that the aeroplane could search the whole coast in four-and-a-half hours, and regain her ship. The scout, if searching all the bays and harbours herself, supposing we reduced her speed on an average to 20 knots to allow of her frequent turns, would take 15 hours to do this work, and, if the days were short, two days would be required. Of course, an aeroplane, scouting at this rate, could not be certain of locating torpedo craft or submarines deliberately attempting to hide themselves. That work would be better done by an airship; but it should have no difficulty in locating anything in the shape of a commerce destroyer or some similar craft.

It seems probable that aeroplanes will attack submarines with success provided the submarine is submerged. A good pilot, passing close above the submarine, should be able to drop a charge of guncotton, arranged to explode well under water, within a few feet of the submarine. This would destroy the submarine or bring her to the surface; but not the aeroplane, as she would have passed some distance from the scene of the explosion when it took place, farther than in the case of steamboats firing spar torpedoes.

AIRSHIPS FOR SCOUTING PURPOSES.

Turning to airships, we see that a 50 knot ship can keep station on a fleet steaming 15 knots, provided the wind is not blowing more than 35 miles per hour from ahead

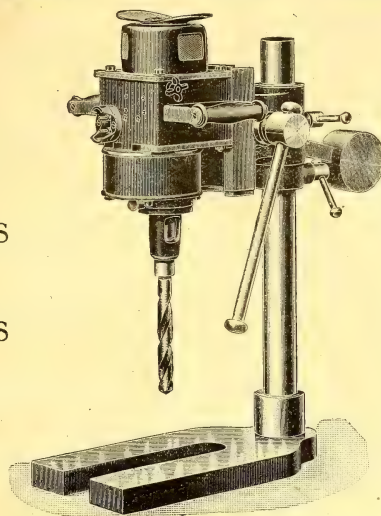
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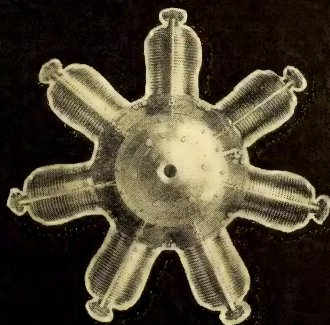


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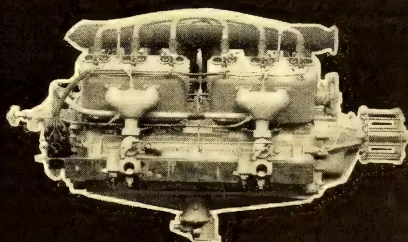
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or more than 47 on either beam. As the wind draws abaft the beam so she is able to keep station in a strong breeze, and if the wind is right aft and blowing 65 miles an hour, she can still keep station on her fleet by steaming against it. That is to say that on most days an Admiral could use her just as he would a cruiser, making use of her increased range of vision on a clear day, with the additional advantage that he could send her to look into an enemy's port, knowing that she is immune from damage by submarines and mines, and far less liable to damage from gunfire than any ordinary ship, while her wireless range is just as great. The question of losing her in thick weather does not apply, as the airship is self-contained and can find her own way about.

A sextant is now made which allows of a sight being taken even when no horizon is visible, and, from experiments made with this, there should be little difficulty in fixing the position to within five miles. Certainly the conditions for taking sights are far more favourable than in a destroyer. The vibration on the top of the airship, with the engines running full power, is practically nil. Fogs are often low lying, and it is conceivable that in the future an airship may be prepared to rise above the fog and report the position of the fleet below. If it is found impossible to rise high enough to see the sun, the airship can be navigated very well by dead reckoning, her leeway being judged by dropping some article or smoke-producing chemical on the sea and taking bearings on it; or else it is possible to stop engines and drift with the wind a few minutes, when the strength and direction of the wind can be found in a similar manner.

A tremendous advantage that the airship has over the aeroplane is that it can work at night, as well as by day. It seems probable that from a height of 1,000 feet the glare of the funnel of a warship would be visible at night, and, should this prove to be correct, an airship should have no difficulty in hanging on to the enemy's fleet by night as well as by day, and keeping the Admiral informed of their movements.

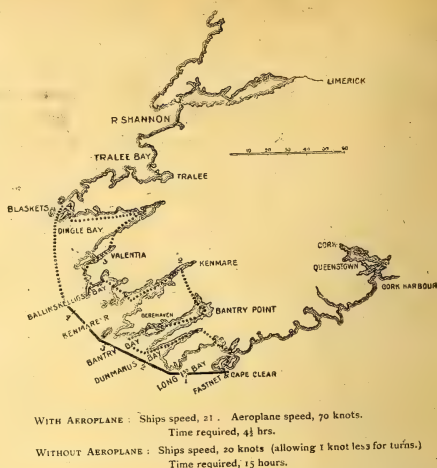
For blockade work, too, they can be in a given position for long periods. For instance, taking the mean of 35 years' observations from the Sailing Directions, an airship could have watched Pembroke every day, except for 23, in the year.

The question of replenishing with fuel and oil from a ship at sea will probably not be found difficult, even in bad weather, as it can be blown into her very rapidly with compressed air through torpedo charging pipes. Once an airship is in tow of her parent ship—and there should be no difficulty in getting in tow, as the airship would drag her bow hawser over the ship—it should be possible to send a charging pipe out along the towing hawser, to connections on the bow cap, communicating with the petrol, oil, and gas-bags. A man on the bow cap, hauling his charging pipe out, would connect it as requisite.

There is, of course, a certain danger to an airship approaching a ship, or being towed by her, from the sparks from the funnel; and it is desirable to fit baffle plates in the funnels and tow with a long scope. A gas-engined ship, of course, overcomes this difficulty. It may be that a large submarine will make a very suitable vessel to tow an airship at first, there being no danger of sparks in her case.

Should an airship be caught at sea in heavy weather, with no ship available to make fast to and she does not wish to run far, it would be possible for her to lie at a drogue. Experiments in this direction have given very promising results, and it seems quite probable that, with a good large drogue down and as near neutral buoyancy as possible, an airship will be able to reduce her speed of drifting to about a quarter that of the wind and maintain herself just on, or clear of, the tops of the waves by means of her aeroplanes.

In searching for hostile submarines the airship has an



advantage over the aeroplane in that she can hunt slowly and carefully with four times the number of lookouts. She can also attack them, as an aeroplane might, by dropping guncotton, but she could not come so close to her target, so she would have less chance of dropping the charge sufficiently close to do any damage, though this might be more than compensated for by the superior instruments and greater charge she could carry.

To keep aircraft off, submarines would have to remain on the surface, where they are liable to be attacked by ordinary ships, so, when once they are located, their position will not be very enviable. Once the battle fleet know the whereabouts of the submarines they can easily avoid them, and the long-range wireless telegraphy of the airship is a very great advantage here, as she can pass information without losing sight of the enemy; in fact, wireless is at present the most important part of the equipment of aircraft, practically doubling their range and utility, and once they have got important information through, it does not so very much matter what ultimately becomes of them. [This is a noteworthy piece of prophecy. Few people, even in the Services to-day, realise that "wireless" is at present the most important part of the equipment of aircraft.—Ed.]

Another possible use of airships is that of repeating ship in a fleet action. Being clear of smoke and out of range of hostile fire, signals could be easily made and read; in fact, the general view of a fleet action will be much better obtained from aloft, so much so that it is conceivable in future that a commander-in-chief may find it advantageous to direct his fleet from an airship at a good height, notwithstanding his natural desire to lead his fleet into action personally.

If we come to consider what damage could be done by aircraft dropping large quantities of explosives, say in the neighbourhood of a ton weight, it opens up great possibilities for attacking dockyards and such like places. It seems improbable that aircraft will ever be able to do much damage to battle fleets at sea, but should it be possible to explode large quantities of guncotton in a basin, or in the neighbourhood of lockgates, the effect would probably be disastrous to all ships lying inside. When we come to consider the large number of torpedo craft a commander-in-chief would be prepared to sacrifice to destroy an enemy's repairing resources, and to damage his ships lying in basin, I think it will be agreed when the question is studied that if we put the equivalent cost in money into airships, we should have a far greater

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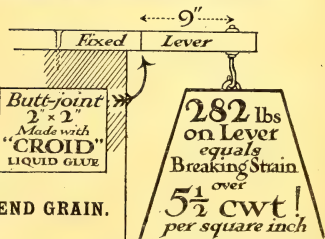
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chance of success, and probably do infinitely more damage. [If only those in power had listened to this prophecy German ports would by now have been much less comfortable places for the German Fleet.—Ed.]

THE ARMING OF AIRSHIPS.

We have not so far taken into consideration that the enemy would have aircraft as well as ourselves, but, naturally, this would be the case. It follows, then, that we should have fighting in the air, either in an endeavour to force our way through the screen of hostile aircraft to obtain the information we required or to prevent him from doing the same. Therefore airships will have to be armed, and I believe it is true that the French and German airships are being so armed; in fact, I have here a specification for an airship for one of these Powers, giving the weight of gun and the number of rounds to be carried, but whether the ship has actually been ordered or not I do not know.

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Or about 5½ tons.	

FUTURE DEVELOPMENT OF AIRCRAFT.

As regards the future development of aircraft, there is, as I have endeavoured to show, no visible limit to the growth of the rigid airship. They are on the same footing in this respect as water ships.

The chief objection to airships is their expense, though four can be built for the price of one destroyer. Unfortunately, in addition, they require sheds for occasional docking, posts to lie at when not in use, or else special harbours, and all this means more money. Aeroplanes, on the other hand, are cheap—about the price of a torpedo. The sheds for docking them are cheap, and they can be easily carried on ships with but little alteration. For harbour defence, for work with our submarine flotillas and increasing the range of vision of ships by scouting around them and attacking submarines they are excellent; but for long distance work, blockade work or forcing a way through a screen of hostile aircraft you must have the airship. The airship bears to the aeroplane the same relation as a battle cruiser does to the torpedo boat. Building battleships whilst not neglecting torpedo craft has always been Great Britain's policy on the sea, and appears to be Germany's policy in the air, whilst the French still continue their policy of depending largely upon torpedo craft on both sea and air.

I trust that in the future our policy in the air will be the same as it has been at sea; and I have little doubt that as the science of aeronautics develops the command of the air will prove to be necessary for us if we wish to keep the command of the sea. The fleet without aircraft to assist it will be at a tremendous disadvantage as compared to one with them. [This is precisely the lesson this paper has endeavoured to teach this country for years. The Command of the Sea is no protection, and may even be worthless, if we have not also the Command of the Air.—Ed.]

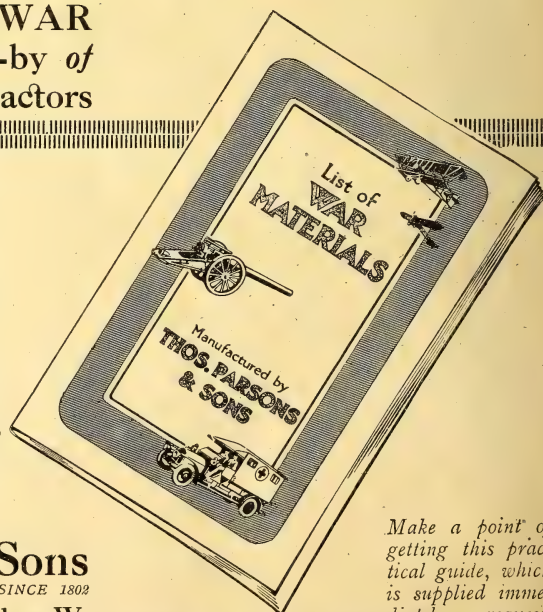
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Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

SOME MECHANICAL CONSIDERATIONS.

However, important as it is, the abstract relation of the motor and propeller speeds is not the whole story in respect of this gearing-down arrangement, in the Renault or any other. There is the mechanical aspect and its immediate results. The most obvious is the abnormally thick cam-shaft—necessarily so, if it is to be in one piece with the propeller shaft—albeit, appropriately enough it is made thicker still under the major bearing.

Yet, since weight saving is a primely important consideration—being at least one reason why this motor is aircooled—I suggest that it would be better practice to double the width of the gear on the crankshaft, so as to enable it to mesh with two parallel half-speed gears; the inner gear driving a light camshaft of ordinary thickness and lighter weight—doing merely camshaft work—with the shaft-end deeply prolonged and freely mounted socket or dowel-fashion as a steady-piece into the propeller shaft independently driven by the outer gear.

Incidentally, the camshaft's end ball-bearing might be so much lighter and smaller that there would be ample room for the somewhat essential combined ball-thrust bearing for the propeller shaft—which seems sadly to seek in this instance—in addition to its own running ball bearing farther out. A little thing—I offer no other criticism—but surely worth while for the reasons given.

THE IMPORTANCE OF KEEPING COOL.

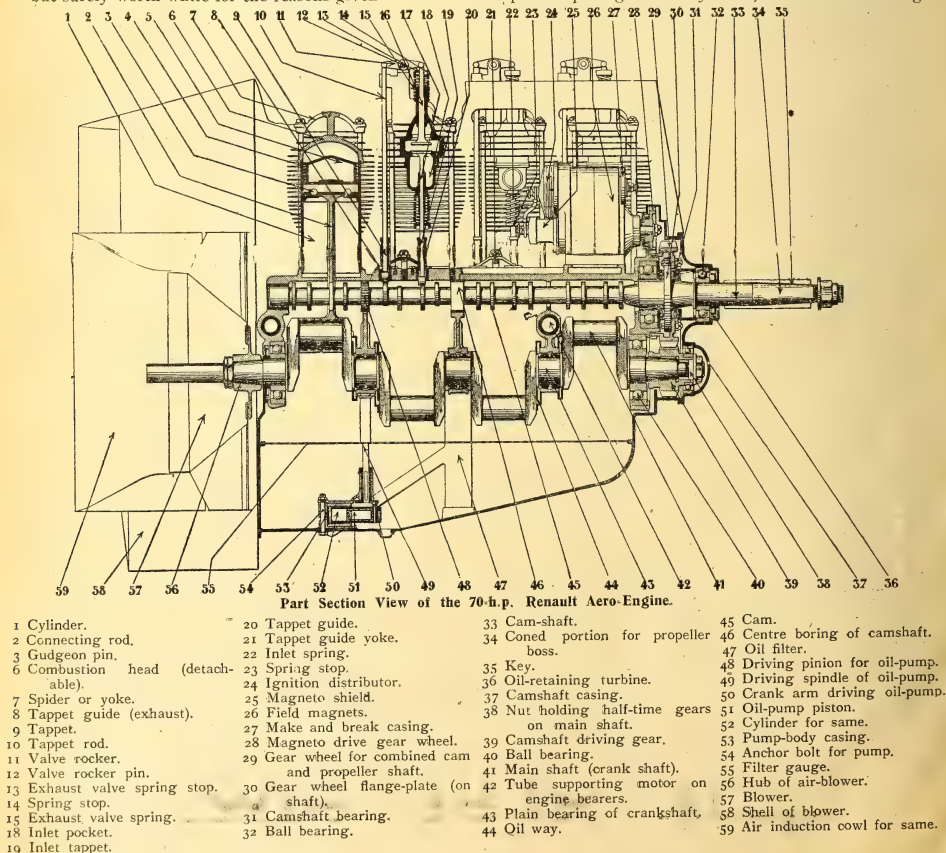
Now, there is nothing in aeromotor practice better assured by hard experience, than that the success or failure of any air-cooled motor—of the stationary V-type at any rate—depends mainly upon the even cooling of its cylinders; not only fore and aft, but all round. Presently will do to discuss the plentiful reasons why, in detail. Suffice it, meanwhile, that the mere travel through the air at high speed is worse than inadequate, because it cools either insufficient or excessive.

Consequently it must—and can only—be effected by special means; such as a blower fan or ventilator, combined with an envelope or cylinder hood, so designed that the air is drawn at the same temperature round all the cylinders at the same moment.

Nothing but the lack of any contrivance of the kind spoils the chances and reputation of an otherwise excellent English-made motor in the early days of flying.

THE RENAULT WAY.

Even more important, then, as a leading feature of the Renault design—than the gearing-drive device—is the centrifugal blower fan (57), which is mounted direct on the hind end of the crankshaft; and, in combination with the central hood—not shown—as a kind of air-tunnel with a separate opening to each cylinder, draws the air through





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the cowl (59) and drives it forward round each cylinder; the rear-cylinders getting the first of it to equalise the cooling, the forward ones naturally get from their position.

One need only cite these last conditions for it to become obvious that merely sucking the air through backward could have no such result. At the same time, for the most to be made of it, I would suggest the addition of sheet-metal wings—like blinkers on a bridle—extended side-wise between the cylinders from the tunnel, so as to isolate each, and ensure its getting an even supply of cool air, neither more nor less than the next, and afford additional radiation on their own account. This, to be quite frank, is doubtful, under present conditions. I would even gear up the blower three turns to two, not only to make sure of durability, but of efficiency, in a very fast-flying aeroplane.

The same may be said, by the way, about the air-cooled 80-h.p. De Dion; which—except for its 8 mm. larger bore—as to its cylinder modelling and attachment, its cooling system and gearing down for identical speeds—is so exactly like the Renault as to suggest that the same hand—was it Ambrose Farcot's?—had designed both; merely varying the accessory details of each to suit the practice of the respective houses.

THE CASE FOR THE DEFENDANT.

Coming now to reasons why, what is the case for the air-cooled motor of the V-type especially; and in a less degree, perhaps, for the fixed stars, the rotaries, and the fan-types, now more confined to school machines? None of them are cooled for nothing, believe me. It costs no less than 5 per cent. of the developed h.p. in the Renault and De Dion; which even so is less than the 12 per cent. in one notable rotary. Even in the star-types, more or less propeller-draught cooled, the resistance of the motor to the air largely reduces the tractive or propulsive force of the wind stick itself.

Altogether, the loss of power is not much less than what is lost in water-cooled motors through the pump gearing and radiator resistance; and one may say, no less than in the condensing system of the Antoinette outfit.

On the other hand, installation is easier, mechanical troubles and risks of failure are got rid of, as well as the encumbrance and weight of parts—including the water itself, except perhaps in the Antoinette system which only needs 15 litres for 60 h.p.—and the water troubles in winter or at great heights.

AND FOR THE CROWN.

But that is all the best that can be said. Against this, air-cooling is less regular in every way, even with such special means as have been discussed. The external air naturally affects results, first and last. The conditions of expansion are not only affected by the tooling of the air-fins, but by the density of the metal in any given cylinder casting. Petrol and lubrication supply are more difficult to get exact. And then, given an effective successfully efficient cooling for the time being—especially in a stationary motor—any change of mixture or advance of ignition that is likely to set up an increase of temperature may rapidly reduce the general factor of safety. Thus a mixture a shade too rich, merely burning instead of exploding, and lessening the effort of the firing-stroke, may well scorch the cylinder concerned.

It is no use, either, to try to cut down petrol consumption; in fact you may expect it to be normally 10 to 20 per cent. higher than in a water-cooled motor. Taking then an extra-fine petrol at .700 sp. gr.—that is 70 per cent. of water weight—it is doubtful if you gain any useful load—or save any useless—on a long flight, because that 10 to 20 per cent. extra, per horse-power hour, is a cumulative loss, albeit the load lightens. Whereas, the weight of water carried remains pretty much the same, and the petrol economy is a clear mileage gain, if we agree it to be a stationary one only.

Then, as to immediate power developed. The high temperature of the combustion—and induction—chamber thins the mixture at once, and this sudden thinning at the instant of its entry lessens the minus pressure within the cylinder, which would otherwise help to amplify the charge aspirated; and so obviously lessens the power-value

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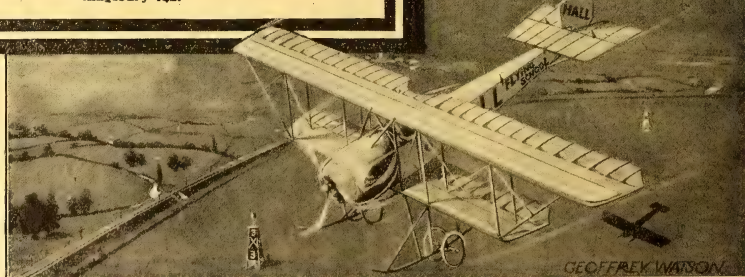
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of a given cylinder volume; both of which factors tend to lessen power. So much for the physical disadvantages.

Mechanically, there we have exhaust valve-heads black-hot at the coolest, mostly cherry-red; so one may the sooner expect distortion; or again, self-ignition. Then the unequal cooling of the different aspects of the cylinders, according to their exposure to the air-draught—here again we see the paramount necessity of specially thoughtfully designed cooling apparatus—may set up sufficient ovalisation to weaken the combustion chamber; at any rate to cause piston-ring breakage and cylinder burning.

All extreme risks, I admit, but sensibly nearer than in water-cooling. Lastly, apart from burning in spots by jets of half-burned gases, the least failure of lubrication nearly always leads to one cylinder at least seizing up.

HOW TO EXTENUATE THE CIRCUMSTANCES.

So there it is. To make the best of air-cooling, one can at least—indeed must—cast the fins of generous width, even if the motor works out two or three inches longer, and the whole design has to be subordinated to that extra length; and machine the fins to a true curve. Personally, I consider the Renault particularly well-studied in this regard. Then, use that form of head that gives the largest valve-areas without pockets.

True, the Renault-De Dion arrangement of exhaust valves set above inlets in a single pocket, and worked by an overhead rocker and tappet-rod, is good enough in its way; but not so good as the inclined transverse valves and "minaretted" heads of the R.E.P., for instance; and this transverse setting, as we have already seen in other cases, can just as well be worked, each pair with a single rocker and tappet-rod from double bell-cranks below, anchor-pivoted, and embracing the camshaft.

There is clearly no objection, again, in any V-type, to discharging the exhaust direct on the outer side of each row of cylinders; or if, for silencing or other sake, exhaust manifolds must be fitted, all the better would they

be cooled from the outward discharge of the air-fan draughts.

Again, the use of the extra ports of the *échappement anticipé* not only help cooling generally, but clear the cylinders quicker and so help to amplify fresh charges of mixture: thus partially lessening one physical disadvantage of air-cooled motors already mentioned. And to prevent the vomiting of oil through these ports, it is surely easy enough to lengthen the piston to cover them at the instroke, even if the piston has to be slotted up between ports to keep its weight down.

ENFIN.

Still, don't expect—above all don't try to get—more than ten or a dozen horse-power at most per cylinder, out of any air-cooled stationary motor. In a rotary, you may try for fifteen and be lucky to get ten. And, whatever you do, don't mix cooling systems, as heads and valves with water, cylinder walls with air-fins; unless you wish to risk destruction by distortion through the uneven coefficients of expansion of adjacent parts; exactly the same as the result of mixed drinks.

REPAIRS WITHOUT WAITING.

So much, then, for all that chiefly realises the unquestionable efficiency—as far as may be—durability and trustworthiness of the Renault and kindred designs. Mechanically, one first of all notices this, that while the valve-position lends itself to their rapid detachment and replacement, the fact that the cylinder-heads (6) are in one-piece with the valve-seatings, and detachable from the cylinders—to which they are fitted in a ground-joint without packing, cycle-motor fashion—enables them to be no less conveniently and rapidly ground, without any risk of grinding powder falling into the cylinders.

Actually, in any such case, one has only to cast off the induction-pipe attachments (62)—threaded sleeves—from that particular passage-entry; the corresponding attachment to the exhaust manifold—if any—then the four

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colonnets nuts securing the spider or four-armed yoke (7)—by which the cylinder as well as its head are actually tied together, and to the crank-chamber—and it lifts clear. Or, you may leave the induction-pipe detachment to the last.

OTHER EXTERNAL POINTS.

The cylinders themselves, beyond their very slight insertion in the crank-chamber entries, have no other attachment thereto, than the colonnettes bolts and spider-yoke afford. It is sufficient; but as the colonnettes are merely threaded into the metal of the crank-chamber casting—a light enough shell, and aluminium at that—one may suggest that the Anzani method of pinning through an eye on the lower end of the bolt—the entire sixteen colonnettes could thus be secured by two rods—would be the sounder practice for absolute security.

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(To be continued.)

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Elsewhere in this issue will be seen some illustrations showing what severe tests Triplex Glass has withstood on active service.

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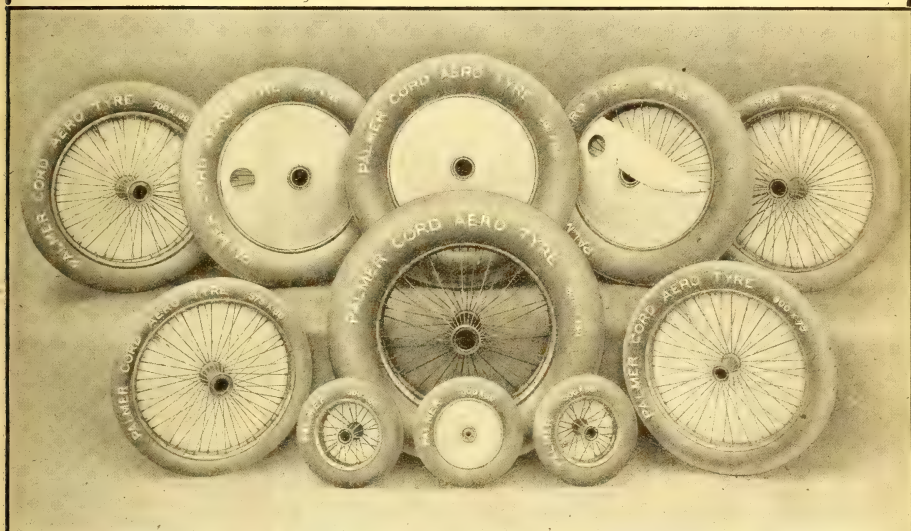
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"	14	150.	38.1	104.46	"	26	150.	40.	Central
"	21	160	28.	Central	"	4	185.	55.	Central
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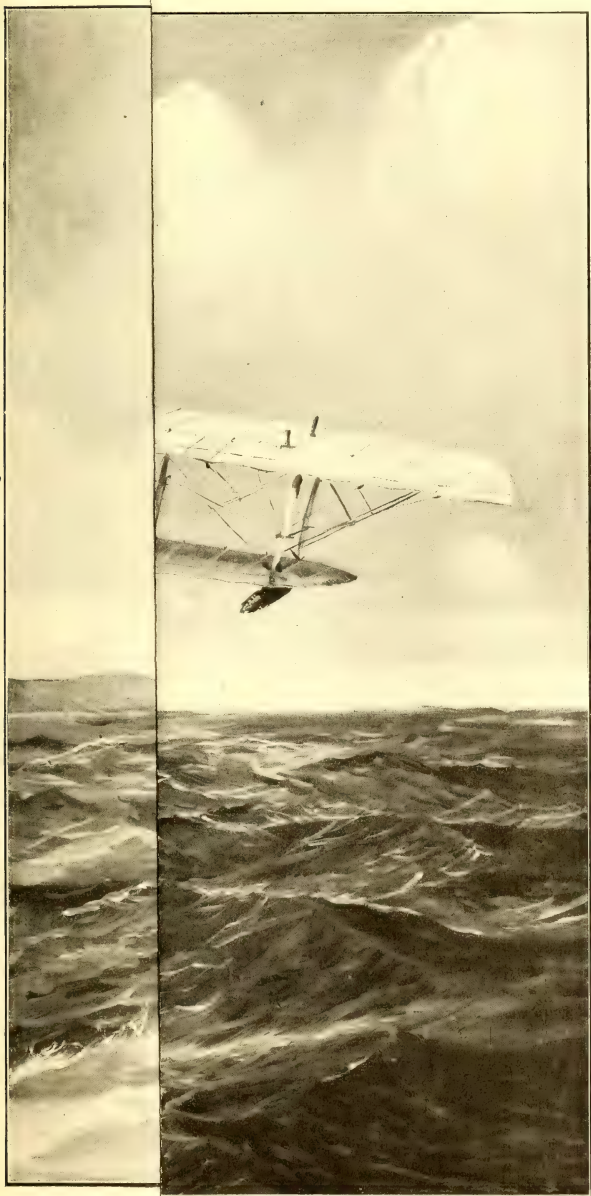
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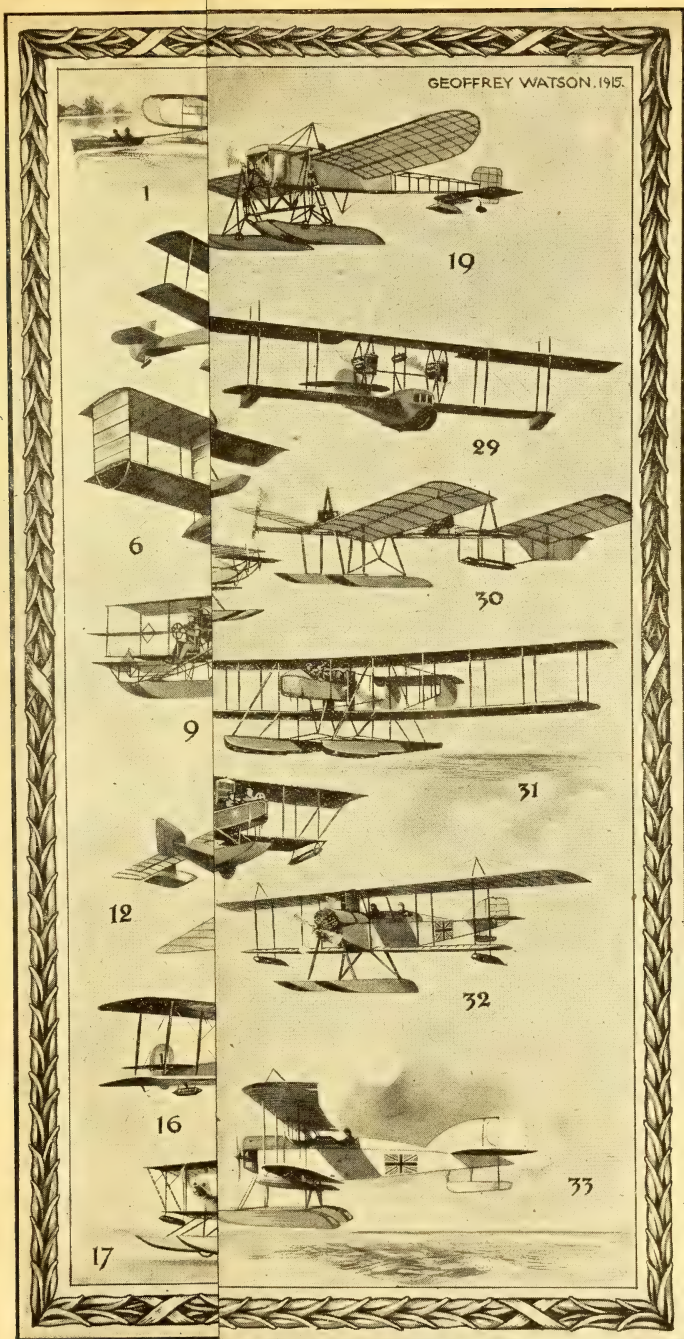
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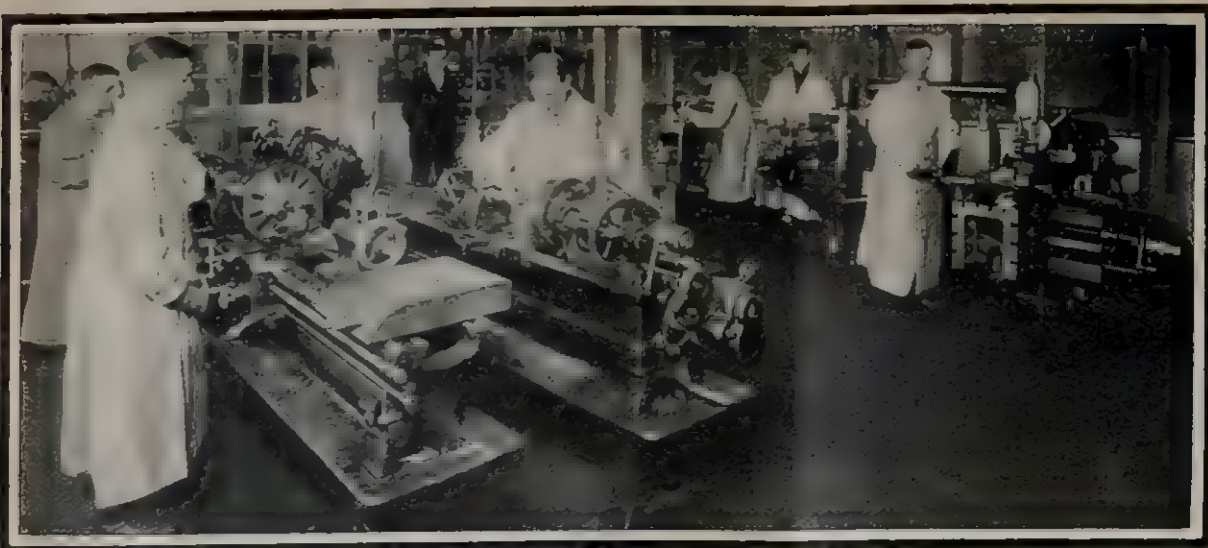


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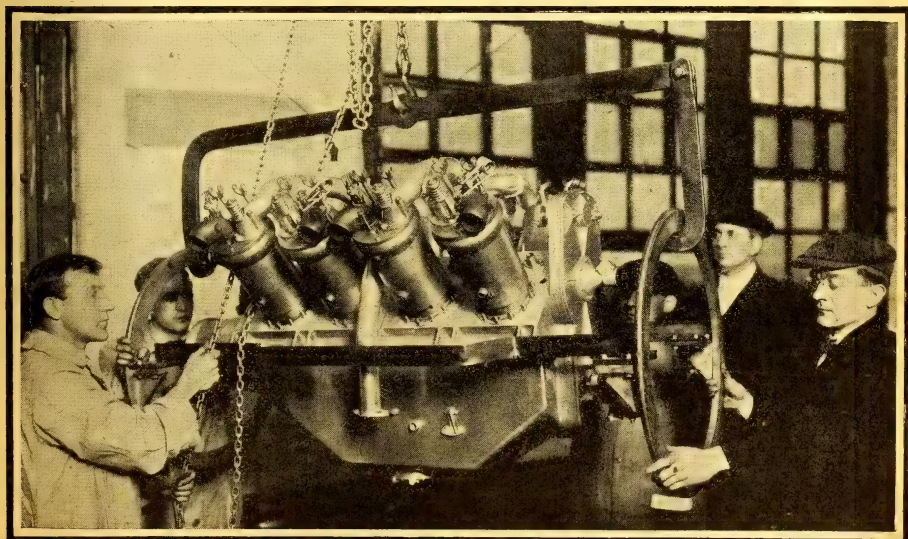
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